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BOARD OF NATURAL RESOURCES

VOLUME 16

TRANSCRIPT OF PROCEEDINGS

THURSDAY, JANUARY 22, 1976

The hearing reconvened at 8:35 A.M. on Thursday, January 22, 1976 in the Chambers of the Montana House of Representatives, State Capitol, Helena, Montana.

The Honorable Carl M. Davis, Hearings Examiner, presided over the proceedings.

HEARINGS EXAMINER: We will proceed with the cross-examination by Mr. Graybill.

APPEARANCES:

Applicants:

William M. Bellingham, Esq.
John L. Peterson, Esq.
John Ross, Esq.

Department of Natural Resources and Conservation:

Arden E. Shenker, Esq.
Donald MacIntyre, Esq.

Northern Cheyenne Tribe, Inc.:

Peter Michael Meloy, Esq.

Northern Plains Resource Council:

Leo Graybill, Jr., Esq.

The following proceedings were had:

CONTINUATION OF EXAMINATION OF GLENN F. NOGLE

Cross, by Northern Plains Resource Council

By Mr. Graybill (continuing):

Q All right, Mr. Nogle, yesterday afternoon we were talking about your Exhibit 20-B, and during the afternoon you told me that Washington Water Power had assigned its 15 percent in the Centralia Plant to BPA and to the Central Valley Project; and we agreed that it would be nice if you had it back so you could be using it in the crucial years that you pointed out here. You said that maybe that was the federal government's fault, as I remember it, that they really had cancelled that Hanford contract without your being aware that they might; isn't that what you said?

A Yes, Mr. Graybill. I testified that the Hanford project was shut down in the fall of 1971 by presidential edict, and it was later restarted; but the output that was available to the private utilities was of considerable lesser amount than had been anticipated prior to the shutdown.

Q Now actually, as I understand it, the Hanford project was shut down because they reworked the plant, and they either have, or are going to reopen it in a new form later on. Isn't that true?

A The Hanford project itself currently, in what we call the new production reactor and turbo-generator that comprise the output that we get from these facilities now, will be in operation through October of '77. We have renegotiated a new contract which goes through October of '77. We have no operation past this date.

Q You don't have any opportunity of getting power from Hanford in the 1980's because they've reworked that plant and upped its production?

A Not from this project, no, sir.

Q From any other projects at hand?

A We are participants, as stated in my testimony, in the Washington Public Power Supply System, number 3 project. We are 5 percent owner in that project.

Q Then, the other thing that we talked about yesterday afternoon was the fact that you are selling power to California and to Idaho; and you pointed out that you received some power from California, 29 megawatts from San Diego. Now, what part of the year do you receive that power?

A We receive this power continually throughout the year.

Q Is it on a level basis?

A Yes, sir.

Q And is there a time of day that you receive it?

A Yes, we deliver the capacity -- the capacity component that we deliver to San Diego is delivered during the heavy load hours; the energy associated with the delivery's capacity plus the exchange energy are returned to our power on the off-peak hours.

Q In the what hours?

A Off-peak, other than the heavy load hours.

Q That's other than your heavy load hours?

A Yes, sir.

Q Does this power come across a DC line that connects California to Oregon?

A Our firm transmission capacity, that we have acquired, is on the AC lines.

Q On the AC line. How long is your contract with San Diego?

A The contract with San Diego -- I'm not just sure if I can tell you the length of time of that contract. I can tell you it has a six-year notice of change in the contract demand.

Q In other words, if San Diego had to stop delivering you that power, they'd have to give you six year's notice?

A Right. Conversely, if we wanted to stop it, we'd have to give San Diego six year's notice.

Q Do you know what type of generation is involved in the San Diego Power?

A San Diego Power has some nuclear power, and I think it's predominately oil-powered generation.

Q So, in other words, it's expensive power in these days?

A Yes, sir, I've considered it expensive power.

Q Do you know what you pay for it? Do you get it at dump power rates or do you pay higher rates than that?

A It's an exchange arrangement, Mr. Graybill. There are no dollars -- the transaction is, if we take the power back from San Diego, then we deliver it to San Diego.

Q All right. You're delivering to them 122 megawatts of peak and they're delivering to you 29 megawatts of energy. Is that the ratio that you've arrived at, about one to four?

A That is the ratio that was negotiated on; it's a ratio of 2500 kilowatt hours of off-peak energy per kilowatt of capacity delivered to them.

Q And if you didn't have that, you'd lose 29 megawatts of energy, but you would not have to supply 122 megawatts of peak, is that right?

A That is correct.

Q So it would make quite a difference in your peak position, which in 1980-'81 you're in trouble on your chart, Exhibit 28, right?

A Yes, sir. It would make a difference in our peak position.

Q What's to prevent you from doubling your contract with San Diego, offering them twice as much peak for twice as much energy?

A I don't know that there would be anything to preclude us from making some type of an offer to San Diego; whether they would accept such an arrangement, I don't know. This was an arrangement that built up to this quantity over a period of time; it was one that was arrived at after looking at both the resources and requirements of San Diego Gas and Electric Company and the Washington Water Power Company. It's rather tailored to both our needs and San Diego's needs, and to just, say, up and double its contract may not be a prudent thing to do.

Q Well, let's take another example. I see that you supply Montana Power peak throughout a good deal of this period, certainly up through 1979, and that you take from Montana Power energy up until then. What would prevent you from raising those levels, and in that manner raising the bar graph so that both you and the Montana Power Company had these needs in the meantime?

A If an exchange arrangement with Montana Power similar to the one that we have, possibly it could be extended or possibly it could be increased in amount, and if this was both beneficial to the Montana Power Company and the Washington Water Power

Company, I think we would probably consummate this type of arrangement.

Q At the moment you are selling 132 megawatts of energy, and by 1985 you're selling only 60 megawatts of energy. Is there any reason why you drop off? I understand which contracts go in and out, but I'm wondering if you're trying to cut down on these contract sales to other utilities.

A No, sir. The contract with Central Valley Project, as we talked about yesterday afternoon, was made in, I think, 1971 for a definitive period of time, and it was powered specifically from the Centralia Steam and Generating Plant; and after December of 1981, this contract terminates. The only other contract we have, that we know of now, through 1985-'86, is an exchange agreement we have with Idaho Power Company.

Q On Exhibit 20, in the cross-hatched blue which you call contract purchases, you've included the exchange power that we've been talking about here, haven't you?

A Yes, sir.

Q But have you also included the power you buy from the PUD's in Washington?

A Yes, it is.

Q And the way to see what would happen if you cancelled the contract sales is to add up the Montana Power and the San Diego Power in your resources, right?

A If we were to cancel the contracts of Montana Power Company and San Diego, as you referred to, why, you would have to eliminate from the resources the power that we get from those two utilities.

Q And in the crucial year -- your first crucial year is 1980-'81, is that right? The first year that you could do anything about Colstrip is 1980-'81, is that right?

A Yes, sir.

Q In that year, you're supplying 85 megawatts of firm power to Central Valley and Idaho; and what are you getting from Central Valley and Idaho at that time? You're getting 72 megawatts of firm power, is that right?

A That is correct.

Q To the extent that these contract sales, shown on the top of Exhibit 20-B then, are to other utilities -- you're saying that you need Colstrip built in order that you can supply power to these other utilities, isn't that so?

A No, sir, Mr. Graybill. I'm saying that we need Colstrip to meet our system requirements, and our system requirements includes deliveries to all our customers and it does include firm contractural arrangements with other utilities. Colstrip power is a resource to our system as similar as all our own hydro generations, our Centralia Steam Plant and other arrangements.

Q Okay. Now, what you're saying is, then, that you needed to meet your system commitments as you have diagramed your system commitments on Exhibit 20-B, right?

A Yes, sir.

Q And by your system, you're not talking about the Washington Water Power System?

A I am talking about the Washington Water Power System.

Q What efforts have you made to replace the Colstrip power, to find other sources for power, if Colstrip wasn't built, in other parts of the Pacific Northwest system, or the total area system?

A To replace Colstrip power per se, we have made no efforts. We are looking at other sources of power to meet our requirements following Colstrip, yes, Mr. Graybill.

Q Well, you say you've made no efforts and yet your annual report for 1974 says, "The company is seeking alternative power sources in the event these units are delayed." Now, I've asked you that very question, except I said, "not built." In the event Colstrip is not built, I've asked you what alternative sources you've sought, and you've said you've sought none; and the annual report says that you have sought them. Now, I don't understand that. Would you explain that?

A Mr. Graybill, I understand your question: What sources of power have we tried to secure to replace Colstrip if Colstrip is not built? And I said that I feel that we have not made any effort to replace Colstrip power as a long-term power supply to our system. We have made efforts to secure power because Colstrip has been delayed, and it has left Washington Water Power in a deficient position because of these delays.

Q So the distinction between my question and what's said in the book here is whether or not it's delayed or never built?

A Yes, sir.

Q All right. Now, suppose it's delayed materially -- I guess we all agree that if it was delayed past 1986, there isn't a Pacific Northwest problem, is there? In other words, the real problem stops after the nuclears come into play, isn't that true?

A After 1986, I think it would -- in addition to the power supplies that are presently scheduled and anticipated to be constructed to meet the area requirements, it would require another power supply equivalent to the size of Colstrip to be in service at that date.

Q Well, you don't think the total Pacific Northwest picture will be in balance after 1986, unless Colstrip is built?

A I think it would be out of balance, yes, sir.

Q I don't believe you could start right now from scratch at this date and probably construct a nuclear plant to be in line by 1986 to replace Colstrip?

A No, I don't think so either, but --

Q It surprises me a little as I had thought you, or at least several of the other witnesses, had pointed out that there are several big nuclear plants being built now, and that by 1986 the crisis would be over as far as the coal-fired plants were concerned, if those nuclear plants get on line. Isn't that really the fact in the West Group forecasts?

A Yes, I believe that the West Group forecast shows that the resources now presently scheduled and the in-service dates that we anticipate, that these units will be in service -- that projected resource requirements are sufficient to meet the projected load requirements. If one of these units is delayed, it could undoubtedly put us in the deficient position.

Q So what you are really saying, and the other applicants here, is that it doesn't make any difference whether there are siting or environmental problems in Montana. Montana either builds this plant or everybody is deficient from now on, forever. Is that what you're saying?

A No, I'm not saying that.

Q Then what are you saying?

A I'm saying by 1986, if Colstrip was not built, that you would have to have another power plant on line, equivalent to the size of Colstrip, so we would not have any adverse effects from the delays of Colstrip.

Q Okay. Do you understand that there's a possibility at least that Colstrip might not be built, Colstrip 3 and 4?

A I understand there is a possibility. That's the purpose of this hearing.

Q That's the purpose of this hearing. I understand that that's also a possibility as far as Skagit is concerned, isn't that right? There's been no ruling yet, isn't that right?

A Skagit is not, as I understand, has not definitely been ruled on yet.

Q And I presume that's probably the case maybe at Boardman, I don't know; but, in other words, there are others that have not definitely been approved yet, isn't that so?

A I think that's correct.

Q All right, now, what are you, as a responsible power official, doing about planning for the possibility that at least one of those plants might not get built? Are you just saying, "We've figured out how many we need and we're not going to think about anything else until you state regulatory agencies give them to us; and if you don't, then everybody's in trouble from then on"? That's what you seem to be saying to me. I want to know what plans you have made in the event any one of these major plants doesn't get built?

A Mr. Graybill, we have tried on an area basis to best coordinate the plans of all the utilities in the area, so we could meet the load requirements to the area on the most economical and on the most straightforward basis that we possibly can to all the utilities concerned.

Q Sure, and you've done a good job. You've got them all on the map here; but then you keep telling me that unless they're all on chart, we're into a catastrophe situation where none of us are going to be able to meet our needs in X, Y and Z years. Now, I'm saying what plans have you if one of these plants doesn't get built? Are you telling me you have no plans?

A If one of these plants doesn't get built, it would require either a short-term installation, probably of combustion turbines, it would require an acceleration of a unit, if a unit could be possibly and physically accelerated in construction and time. Mr. Graybill, what you're proposing if we'd overbuild is that we'd provide resources in addition to what we need for the area requirements; we'd expend tremendous amounts of capital dollars and outlay, and put additional burdens on our customers to ensure that we don't have a power outage or a plant isn't delayed.

Q No, Mr. Nogle, I'm not proposing that you build an alternative one and have it set aside; I'm proposing that maybe you want to plan one, and I can't find that you've planned a single plant that isn't absolutely crucial. And what you now tell me is that there are two ways that you would meet an emergency if Colstrip or any of the other big units aren't built, and the first way is steam power turbine generations; is that what you tell me? That's one way?

A That's one way.

Q All right. So, in other words, it is possible to meet the needs in these peak periods by a turbine substitute?

A If you could secure an oil supply and you had enough lead time.

Q Well, how much lead time do you need?

A I think for combustion turbines you'd need at least two years, possibly a little more than that.

Q So we have plenty of time to plan that for 1981 and for 1984, '85, '86 and so forth, right?

A Yes, I think you could plan on combustion turbines for 1981 or '84 or later.

Q So, the fact is, that we really could supply the power needs here, if one of these major plants wasn't built, by steam turbine generation?

A If we could get an oil supply from the FEA, or get approval for oil, and you could operate these. It would be tremendously expensive, as you realize, Mr. Graybill.

Q Well, the oil supply for these wouldn't be any more expensive than the oil supply for the San Diego power that you're buying, isn't that true?

A No, that is not true.

Q You mean the same oil they burn in San Diego won't fire a plant in Washington?

A There's a lot of difference between putting a combustion turbine on for emergency purposes, and building a base-load oil-fired thermal generation. They are different types of plants.

Q I understand that -- well, since you're not with Portland, I won't go into Portland's turbine problem, turbine plant. Well, of course, you'd agree with me that even in these crucial periods, you wouldn't need this power constantly; you would only need it sometimes, because you don't use your plant to the fullest extent all day long or all seasons of the year, do you?

A If it is a base-load thermal generation plant, one that we feel will operate at maximum output or we would get 75 percent of the rated output as an energy production over the year; yes, we would need that day in and day out, hour in and hour out.

Q Have you done the planning that would indicate that that's the only way you could meet this with steam turbine generation? In other words, I understand that a turbine base-load unit is more expensive than a coal-fired base-load unit. I understand that, not because of any engineering knowledge, but I take your word for it. But are you sure that's the only alternative that would work to meet your needs in these crucial years, if one of the big plants wasn't built?

A If I understand your question, there possibly could be other alternatives, if you could import power from some other area.

Q Sure, and your hydro power--I understand you use your hydro power for peaking, isn't that true?

A Yes, for peaking and for energy production.

Q On the other hand, hydro power is cheaper and is also useful for energy production, right?

A Yes, sir. I just couldn't say it's basically cheaper; there's a lot of hydro power that could be very, very expensive.

Q So, in addition to the steam turbine method of replacing Colstrip or any of the other big plants that might not be built, you mentioned a second possibility. What was that?

A I said if there was power available for import in the area, and we could purchase it -- you could import power from some other area if you had transmission facilities and you had the oil that was necessary to operate generation --

Q In other words, it might be possible to do more of what you're doing now, that is, exchange power back and forth?

A It would not be an exchange of power. If one of these plants was not built, or come on the line, it would require a new power source. It would not be an exchange; it would be a purchase, I believe, or an import strictly from outside of the West Group area.

Q But that's another possibility, is that right?

A That's a possibility.

Q So, we now have two possible ways to replace Colstrip, if Colstrip wasn't built or, for that matter, any of the other plants, if they weren't built. One is turbine, which would be more expensive because of the fuel, and the other is to buy power from outside the area, is that right?

A Right. You realize to buy power from outside the area, somebody would have to have, sitting on the outside of this area, a plant like Colstrip that is entirely surplus to their needs and --

Q Well, as a matter of fact --

A -- somebody's overbuilt that much.

Q You and I understand that that is not really true at all. You aren't getting your power now by somebody having a whole plant that they don't use; you pick up a little here and a little there, and you pick it up when other people don't need it, isn't that right, and you exchange it? You've just explained at great length to me how you work with San Diego, and how you work with Idaho, and how you work with Montana Power, and how you work with the Central Valley Project, and you wouldn't want the record to illustrate that you, as an engineer, said the only way you could get power from outside would be that somebody would have a complete power plant that was unused in another area, do you?

A If you wanted to replace a plant the size of Colstrip, it would take that equivalent amount of power, I'm trying to point out, Mr. Graybill. It would have to be power to that amount, surplus to somebody else's needs.

Q You'd have to have that amount of power --

A Right.

Q -- but you wouldn't have to have a plant sitting somewhere, would you?

A It could be from several plants. That is a great deal of power to just be sitting idle outside of the area, available to be imported within the area. It would have to be a dependable power supply, also, Mr. Graybill.

Q Have you studied that situation, Mr. Nogle?

A Yes, I think I mentioned in answer to Mr. Shenker's question yesterday that we have looked at available power supplies in the short-term basis, in '79-'80 and '80-'81, to meet the Washington Water Power Company's requirements that we had contacted with other utilities.

Q All right, now, that takes me back to what the annual report says, because it really does say that you are seeking alternative sources of power for delay; and now let's look at the case where Colstrip is merely delayed, or Skagit or one of the others is merely delayed for one, two, three, four years. What alternative power sources are you looking at in that event, as described in your annual report last year.

A We are looking at a short-term, possibly some type of an emergency arrangement that we could make with other utilities to replace the power that we would otherwise have secured from the Colstrip project.

Q What -- be more specific. What are you looking at? You must be looking at something or you wouldn't put it in the annual report here?

A Yes, sir. As I mentioned yesterday, we had contact with Arizona Public Service, we have made contacts with the public service in New Mexico, we have made contacts with Utah Power and Light, and through Utah, Salt River Project, and we also investigated the possibilities of putting combustion turbines in our service area.

Q Yes, and now let's take these up one at a time. What have you found out from New Mexico?

A We found out from our discussions in New Mexico that the power that we would have to, or type of arrangement we could make, would be very, very expensive.

Q So, it's a matter of cost, rather than a matter of availability?

A There would be two factors; one would be securing transmission from New Mexico to our system; and the other would be a factor of cost, assuming that you had an alternative to New Mexico to weigh against it as a reliable resource to meet your requirements.

Q Are you still interested in New Mexico, or is that absolutely impossible?

A I don't believe -- the conditions and the arrangements that we, tentatively at least, talked about with New Mexico were not a very viable arrangement, as far as we were concerned.

Q Okay, let's talk about Arizona. How about Arizona?

A Arizona would have had power from similar units to what we may be considering installed; in other words, it would be from, probably combustion turbines. The transmission configuration may be such that -- we did not have a firm transmission route for the quantities we need.

Q Well, now, San Diego is selling you energy, not peak, and you told me that was oil-fired?

A Yes, sir. I said that's base-load oil-fired generation.

Q Okay, so the power you're talking about from Arizona wouldn't be any more expensive than the power you're getting from San Diego, except that you're exchanging; isn't that right?

A I think the power from Arizona, at least in discussions that we've had with Arizona, was that this would be from combustion turbines. It would be an off-peak generation from combustion turbines, and these are similar to the type of emergency generation we put in the end. Combustion turbines are fairly expensive to operate.

Q Well, they must be expensive to operate in San Diego as well as in Arizona?

A I've tried to make the point that I believe that San Diego's generation is base-load oil-fired. Thermal generation is not combustion turbines.

Q A few minutes ago you were telling me that if you built that kind of a plant it would be terribly expensive.

A It looks like whether we purchase it from another utility or whether we build it ourselves, it's expensive. If we build it ourselves, it's a lot more reliable, as far as I'm concerned.

Q Okay, now we've started and we've looked at New Mexico and we think that's no good; that isn't going to work. Now we've looked at Arizona and I want to know if you think that's viable or not.

A No, I don't. I think to build our own is a better alternative, myself.

Q That's not viable. You also mentioned Utah, what about it?

A We still have discussions with Utah and --

Q Is that viable?

A It may be.

Q So you have a possibility of getting some power from Utah?

A I think there's a possibility of getting some power from Utah, and Salt River, through Utah.

Q Salt River is really in what, Arizona?

A Yes.

Q But that's a different plant or something?

A Yes, it's a different utility.

Q So you have a possibility of getting some replacement power from Salt River and from Utah, is that right?

A Yes, sir, we're exploring this possibility.

Q That's one of the things you mean in the annual report when you say that you're investigating alternative sources, in case Colstrip is delayed?

A Yes, sir.

Q Now, what other possibilities, than those two, have you considered?

A The other possibility that we have considered, and are considering, is proceeding with a site certification in our immediate service area to put in some combustion turbines in our own service area.

Q In other words, Washington Water Power might be able to put its own plant in, in the state of Washington, to supply power in the event Colstrip is delayed?

A On an emergency-type basis. These would be combustion turbines, primarily peaking units, that we would operate on an emergency basis for energy production in this interim period that Colstrip is on the line.

Q And you could build these with a very short lead time, not over two years, right?

A I think it probably would be in excess of two years, but I feel that two to three years is somewhat of the lead time that right now you are looking at with combustion turbines.

Q If it became apparent that Colstrip would be delayed, then you'd go ahead and do that, plus these two other possibilities from Utah, is that right?

A Yes, that's right.

Q This is what we are to allow you to get through your 1981 and 1983-4 crises?

A In the annual report we were referring to, I think the crisis there was delayed from 1978 to '79. I think that at the time this annual report was prepared that Colstrip had been delayed until '79. I don't know that we had contemplated that it would be delayed to 1980, at that time.

Q You and I are aware that the lead time for a coal-fired plant in Washington is longer, and the lead time, apparently, for what you call base thermal generation is longer than a year or two. Would these emergency measures make it possible for you to plan for alternative plants in the event Colstrip wasn't built? Would these alternative measures that you've just described make it possible for you to plan for a base alternative power source, in the event Colstrip was not built?

A In the event Colstrip was not built, we would not look at combustion turbines as being a viable, long-term alternative.

Q I didn't say as a long term; would they be a viable short term to allow you the lead time necessary to build a viable long term of your own in Washington?

A It would be one method we would have to surely look at, Mr. Graybill.

Q Well, that's a possibility also, right?

A That is a possibility.

Q And that's a possibility if Skagit was turned down, or some other plant were turned down, isn't it?

A Yes. I think that I've already mentioned that if one of these plants is turned down or delayed until you could put in another base-load thermal plant to replace it, the combustion turbines would be an alternative.

Q So it is possible, except that it might be more expensive and it isn't as easy, and it would require an oil supply. This is -- all right. Are there any other alternatives, in the event Colstrip is either delayed longer or not built, that you have examined? Can you think of any other alternatives?

A No, I can't, not off-hand, Mr. Graybill.

Q Well, let's broaden our thought a little bit and see if we can't think of some other alternatives that may not involve building any plants at all. I'm looking at your 1973 annual report, and I see that you had a marvelous response to your request of your customers to conserve electricity. Your annual report reveals that in that year you had a water problem; do you recall that?

A Yes, sir, I do.

Q And the annual report says that Washington Water Power's customers responded with an estimated 4.5 percent to 5.5 percent reduction in usage, and mandatory curtailment was averted. Are you telling me that you were able to cut 4.5 to 5.5 percent of your usage without mandatory curtailment in any of your customers?

A Yes, sir.

Q So that in the event that one of these plants wasn't built, conservation offers another alternative method of avoiding being unable to serve, doesn't it?

A If you could conserve to the quantities that is required to replace a plant, why, that much reduction in load due to conservation would be an alternative to a plant.

Q Your annual report points out that that conservation effort, coupled with some low-cost secondary energy, in other words, some of this trading that you did, made it possible for you to get through a very difficult period without any real trouble; isn't that so?

A Yes, sir.

Q It says that you'd had a growth rate of 7 percent and that that continued until the early part of 1973, but then beginning in August this growth rate was reduced sharply, primarily by the conservation efforts of your customers. In the event Colstrip is delayed, is conservation a viable alternative to that, as a result of the delay?

A Mr. Graybill, we are advocating conservation currently. We have been urging our customers to conserve and use electricity wisely; we've been urging them to insulate their homes; we've been really trying to get home the methods of implementing conservation to all our customers. I think this is a way of life, this conservation. You're saying we'd have to have more conservation or a larger degree of conservation. In 1973, we had an all-out program on conservation because we had some real serious problems.

Q What do you mean, conservation is "a way of life"?

A I think conserving energy is something we've all got to do.

Q Now, I've examined your Exhibit 20-C and it has an historic growth -- I went back to 1956 there, where there was somewhat of a bulge in the line, and I examined the 17-year period up until the present time, and you have a growth rate somewhat modestly in excess of 4 percent; isn't that correct?

A I think that would probably -- in the last 20 years we've had a growth rate around 4.2 percent.

Q Yes, that's what I calculated it at. And then in 1973 and '74, you had a dip in your demand for load needs, which I take it may have been partly due to the water shortage, or it may have been due to conservation efforts. But then I see your projected line for the next 10 or 15 years, or certainly through 1982 or '83, goes merrily along at the same 4 or 4½ percent that it was before. If conservation is a way of life, why can't we lower that curve in the future?

A This curve already contemplates that people are conserving to the extent they did conserve in 1973-4. We've lost a year's load growth by conservation. People, if they went back to their other way of life style prior to conservation, this curve would go back up to where it was. We are assuming that the people will continue to conserve energy in some -- maybe not quite as drastically or quite as severe as it was during the 1973-4 period, but we are anticipating and have built into our forecast continuing conservation effort.

Q But what you're saying then is that if that weren't the case, the line would go up and we'd somehow have a growth rate of greater than that. It seems to me that you're saying that conservation is a temporary situation only, instead of a long-term situation?

A No, sir. If conservation had been a short-term situation, our projection would have gone right back up to the trend it was before. See, we've lost about a year's load growth due to conservation, and you see it just sort of level out in '73-4, and then going back to about the original projection.

Q Well, it goes back to the same trend --

A Yes.

Q I don't know that it goes back to the same height, or point.

A That's the point that I'm trying to make, Mr. Graybill. If it goes back to about the same trend as before, we've lost a year's load growth due to conservation. If these people were not to conserve, it would immediately go back up to where it was without that reduction in load growth.

Q You say on page 11 that the projections demonstrate that over the long period of time, it will continue to go up even though load estimates are not and cannot be exact. It is only a matter of relatively short time before the actual loads will catch up with the projections. Why is that? Is it true that we're going to simply continue to use more electricity forever?

A I think you're probably using more forms of energy forever. This is two things, the number of customers in our system will be expanding and kilowatt hour per customer may be expanding.

Q Well, in certain parts of the Pacific Northwest, maybe not your company, but certainly in certain other parts, the population has actually leveled off and -- what I'm saying is, isn't it possible that the trend will not continue as you have it drawn here, forever? Let me give you an example; I'm very familiar with the airline industry and we drew 15 percent per year growth rates in the airline industry for 10 or 15 years, and then suddenly that stops, and we don't seem to be able to get it to come back. Is that possible in the electric power industry?

A I could not say it's not possible, but I surely don't believe it's a problem.

Q You don't see any reason that it would be like that?

A I think there's an awful lot of reasons it will not be.

Q For example, the President the other night talked about solar energy, and I understand that solar energy is expensive at the moment, but if solar energy ever became available, would that permanently change your demand needs?

A It would surely influence them, I think, Mr. Graybill.

Q And you're certainly aware that, because of the oil crisis, there are at least half a dozen, and maybe more, other major research efforts in the energy business, aside from electrical energy, and if any of these caught on -- are you saying -- you see, your line just goes right straight on up practically to the end of the chart. Are you saying that for the entire foreseeable future that you don't think these research efforts are going to make any difference, and we're going to continue to use electricity on an accelerating basis?

A Well, I think, Mr. Graybill, that -- I don't want to say forever -- our chart goes through 1985-'86. Through the period of 1985-'86 that you're looking at, our projection is that we will have an increase in load growth. I think there are a lot of factors that tend to substantiate that fact, that we will have a load growth. We have an increasing number of customers in our system. Even with the zero-type of population growth, there's tendencies to go into smaller sized family units; there's more apartments, more houses being built, more customer hook-ups. We have run into a greater use of electricity for electric heat in our system. All efforts of conservation primarily require increasing amounts of electricity.

Q You say on page 9 of your statement, a counteracting and indeterminate factor is the increased demand for electricity. It seems to me you're saying two things here, first that the demand for electricity will continue to increase, and then you seem to be saying that it's really indeterminate and you can't be sure. Are we building these plants on that basis? What do you mean by indeterminate?

A I think that what we have tried to say on page 9, Mr. Graybill, is that we are making efforts towards informing our customers about avoiding waste of electricity, or all forms of energy, and urging that they conserve in any way possible; at the same time dependence on oil and natural gas; and the increasing uncertainty about the availability of oil and natural gas, has had a marked effect on the conversion and on installation of electric heat as a source of heating in our houses.

Q Despite all of these things you say about the trend continuing, the fact is that during the past year, your company only had a 2.5 percent growth in electrical use; isn't that right?

A This was the year 1974? Is this the annual report you're looking at, sir?

Q Yes, the latest annual report.

A 1974 over 1973, I think 2.5 percent is approximately right.

Q Do you feel that in regard to peak there is capacity available in the Pacific Northwest, Bonneville area, to meet the needs that you show on Exhibit 20-A for the years 1979 through '81?

A Yes, I do believe there is capacity available in the Northwest to meet our needs in this period you referred to. I do not say entirely that it would be on the Bonneville Power Administration's system.

Q I see. But, in other words, it is available in the Northwest where you could get at it; it's interconnected somewhere?

A Yes, sir.

Q All right, how about in the period 1983 to '86. Do you believe there's peak available in the area of the Pacific Northwest to cover that period?

A Yes, sir. Our studies indicate anyway that there is quite a surplus of capacity in the Northwest in that period.

Q So that while Washington Water Power, on Exhibit 20-A, demonstrates certain peak load deficiencies in the two periods we've talked about, the fact of the matter is those can be replaced in the system; isn't that true?

A We are anticipating, Mr. Graybill, that we will be able to purchase some capacity in those years.

Q All right. When you first conceived of needing additional coal-fired thermal capacity which led to Colstrip, did you yourself, or your company, make any effort to determine where the best site for this particular facility would be?

A Are you talking about the Colstrip project, sir?

Q Yes.

A I'm not sure I understood your question.

Q Well, let's rephrase the question. Colstrip 1 and 2 were started before the Siting Act, but as to whether or not to add units 3 and 4 to Colstrip, Montana's Siting Act requires that alternative sites be examined, or be considered. I'm asking if your company considered any alternative sites for locating the generating capacity involved in 3 and 4?

A No, sir.

Q You didn't make any effort to find any alternative sites?

A No, sir.

Q Would it have been possible to have built some other megawatt plants, such as 3 and 4 are, in the state of Washington?

A I don't know whether it would be possible or not, sir; I surmise that it would be possible, yes.

Q If, at the time you first conceived of building 3 and 4, if the plan would have been to build 3 and 4 as additions at Centralia, would that have been possible?

A I believe so.

Q Is there enough coal at Centralia for such plants?

A No, sir.

Q Could the coal have been imported?

A Coal could have been imported by rail, possibly, sir.

Q But no Washington State alternative sites were considered when you decided to go into 3 and 4?

A I mentioned yesterday that at the time that we went into 3 and 4, we had been looking at sites in our service area, or been considering the possibilities of importing coal to the Washington area from Canada, from Montana, from Wyoming.

Q In fact, you actually abandoned the plans to build on other Washington sites when you entered Colstrip's consortium; is that true?

A I don't know that you can say we abandoned plans. We felt at that time that Colstrip was a viable alternative that would benefit -- it was most likely an alternative for the Washington Water Power and also our participating in Colstrip had wider benefits to other parties such as Montana Power.

Q And if, for some reason, any reason, Colstrip 3 and 4 now were not built, you could go back and pursue those same plans; is that right?

A If Colstrip 3 and 4 is not built, and even if Colstrip 3 and 4 is built, I feel we'll be looking at coal-fired generation in the vicinity of our company's service area in the future.

Q And if you were looking at coal-fired generation in the vicinity of your service area in the future, where would you get the coal?

A I assume that the coal would come from either Montana or Wyoming.

Q You're telling me that even with Colstrip you plan to buy more coal from Montana or Wyoming in the future?

A I'm saying we are looking at this possibility, yes, sir.

Q Though it's quite possible that if Colstrip weren't built, you'd still buy the coal and build it out in Washington?

A The same coal?

Q I don't know if it would be from the same company, but from the same area.

A I think that is probably true. If Colstrip wasn't built, we may be looking at buying coal in either the states of Montana or Wyoming, it's possible even Canada, but --

Q You're aware that there are several companies selling coal in Eastern Montana that would sell coal to you if you wanted to buy it?

A I am not familiar with that aspect of the coal mining, Mr. Graybill.

Q Yesterday, Mr. Knight told me about his company's participation in the 230 KV line from Colstrip to Broadview, which, I presume, you heard him testify about?

A I did hear him testify about that.

Q I presume you're aware that that's called a convertible line in that it can be converted to 500 KV if 3 and 4 are built?

A I heard that mentioned yesterday.

Q Are you familiar with your company's participation in that convertible feature?

A No, I'm not.

Q You don't know whether or not it is paying part of the cost of the convertible feature?

A I assume if it's part of the project cost that we are paying our percentage of the convertible feature.

Q Okay. I noticed in the annual reports that your company, of course, owns the coal mine in Centralia, isn't that right?

A That is right. They're a subsidiary, yes.

Q I noticed they had a good deal of difficulty getting that coal mine operating. There was talk in the annual report about broken seams and about narrow seams, but that now it's in fairly regular and good production; is that right?

A I understand they have overcome a lot of the difficulties they initially encountered and production is much better than it was originally.

Q And did I understand you a few minutes ago to say that there probably is not sufficient coal available there to add to the Centralia thermal units, to add units?

A That is right.

Q In other words, there's just enough there to handle the Centralia plant for its projected lifetime?

A That is correct.

Q Has Washington Water Power had a rate increase lately?

A We were granted a rate increase in 1975.

Q Last year?

A Last year.

Q In your annual report for 1974, you show a revenue per kilowatt hour for residential services of 1.21 cents. I take it that's been raised now, then?

A Yes. I think the 1974 -- that was the average for the year?

A Yes, 1.21.

A That has probably been raised about twice then because we got a rate increase in the fall of 1974 --

Q How much was it?

A I think approximately 8 percent, but I'm not positive.

Q Then, what was the one in 1975?

A 8 percent, in that neighborhood.

Q So, you've had about 16 percent increase on the 1.21?

A The 1.21 was an average for 1974, and I would guess that only one or two months of that was influenced by the rate increase, so I'd say that's probably a fair surmisal of the situation.

Q Do you know what the revenue per kilowatt hour is, roughly in cents, now, average?

A No, I don't.

Q Well, if we rounded it out upward, it would be around 1.4, wouldn't it, if you added 16 percent to 1.21? It isn't really important to me what it exactly is. The fact is, though, that your company, through its -- through the economies that your area allows, and through your good management, is able to sell power to its residential customers at something less than 1.5 cents per kilowatt hour?

A That's right.

Q And you're familiar, from testimony yesterday, that in Montana the Montana Power Company has been charging its customers 2.46 cents per kilowatt hour in 1974 and that they have a 22 percent rate increase in; are you familiar with that?

A I understood that yesterday, that they had that request in.

Q So, although some of the alternatives that we've discussed here, to the building of Colstrip, might be expensive, that the expense is not likely to cause the Washington residential customer to pay any more than the Montana residential customer, is it?

A No, sir.

Q Even if we had to use the expensive alternatives for part of our power, for part of your power, isn't that so?

A If I understand your question, if we had to build some more expensive alternatives than Colstrip, is that your question?

Q Then the Washington Water Power rates still would likely be considerably below, or not any greater than the Montana residential rates?

A Yes, I think you have made a fair statement.

Q All right.

MR. GRAYBILL: I think that's all I have at the moment.

HEARING EXAMINER: Re-direct, Mr. Bellingham.

Redirect, by Applicants

By Mr. Bellingham:

Q Mr. Nogle, you have been asked the various background of 3 and 4 insofar as it pertained to your company, the Washington Water Power Company. I would like to ask you directly just why did you, when I say you, I'm referring to your company, elect to participate in 3 and 4?

A Mr. Bellingham, at the time that Washington Water Power had the opportunity to participate in 3 and 4, it looked to us like it was the best alternative available to the Washington Water Power to meet our projected requirements; also by participating in 3 and 4, we enabled the Montana Power Company and other participants in this project, to go ahead with a project of the size of Colstrip 3 and 4, the chief economies of scale of 3 and 4, which we feel were of benefit both to the Washington Water Power Company and other participants in the Colstrip project. There were some definite savings, I am sure, to be had by going through a planned, orderly development of two 700 megawatt units at the Colstrip site, and the chief economies of scale associated with these projects.

Q Now, you mentioned economies of scale that Mr. Labrie has previously gone into, but I wonder, would you explain, if you will, what you mean by that?

A If a utility is to build a plant to meet its own system requirements, Mr. Bellingham, for instance, like the Washington Water Power, we would have to build plants in the neighborhood of 50 to 100 megawatts; that's all the larger plant that we could absorb in our load growth, without having a tremendous amount of surplus in our system or investing a lot of capital that we couldn't use for quite some period of time. By cooperatively planning our units and taking small percentages in plants, and planning to meet the area needs, we can go to much larger plants that are much more efficient in operation, lower cost dollars-per-kilowatt of invested capital, and also by participating in a number of plants, you have a diversity of operation and diversity of ownership of resources.

Q Now then, assume that Montana Power, at the time of the decision relative to 3 and 4, had elected, instead of going into 3 and 4, to build a smaller plant to take care of its own power requirements and loads only; what effect would that have had upon the rate payer or customer of Montana Power, insofar as cost of electricity is concerned?

A I think that if Montana had elected to go on their own and build smaller plants, I think the cost-per-kilowatt to the Montana Power Company of updating the power supply would be considerably more, and the cost would have to be passed onto the customers and they would have to pay higher rates.

Q Why do you say that?

A Inherently, it's going to cost you considerably more to build smaller plants than it is larger plants.

Q I think you may have touched upon this, but I would appreciate your telling me if you have a figure relative to your company's average growth over the last 10 years, that is, from 1965 to 1975?

A In the last ten-year period, our company growth has been approximately 4.8 percent.

Q And that is on a yearly average basis?

A That's on a yearly average basis.

Q Now, do you have a figure for the past twenty years, that is, 1955 to 1975?

A Yes, sir. Our average growth over that period of time was approximately 4.4 percent.

Q Now, there's been numerous references here to peak and energy, and the differences have been brought out; I don't think we need to go into that. But as far as your company is concerned, what is your problem as far as resources are concerned, peak or energy?

A Our problem is with energy, Mr. Bellingham.

Q And why is that?

A Our problem with energy, at least the way that I can best put it, is that we need a firm power base energy resource to meet our system requirements. Capacity -- we are adding an additional unit to the Noxon Rapids plant, and we feel there is capacity that can be added in the area and possibly in our system, and I mentioned that we are putting in some combustion turbine plants. To get a firm energy supply, we feel that we have to have a base load resource thermal plant, such as Colstrip.

Q Now, you referred to capacity once again. By that you are using that term intermingled with peak as the same, am I correct in that?

A You are correct.

Q And I think it has been previously brought out that, as far as peak itself is concerned, apparently there is enough of that available in the Northwest area so that it is possible to buy, in the future, peak to take care of any expected deficiencies; am I correct in that?

A Yes, sir.

Q Now then, you referred to the San Diego Gas and Electric Company sales and services previously. Do you recall that?

A Yes, sir.

Q You also testified relative to their base load turbine generating units down there, did you not?

A I referred to the base load units. I think they have two types of base load generation. They are a participant in the San Onofre nuclear plant and I believe they have predominately oil-fired base load generation.

Q Oil fired. Now then, do you have any idea as to the comparison of cost between their oil-fired generation as compared with generation in the Northwest area?

A For turbines?

Q Yes.

A If I understand your question, their oil-fired generation is considerably less expensive to operate than combustion turbines would be in the Northwest.

Q And why is that?

A They're predominately - it's a different type of a plant. A combustion turbine is a peaking type of a resource; it is not low capital cost. The efficiency of a combustion turbine isn't nearly as good as it is on a larger oil-fired generation.

Q Do you have any idea of the approximate percentage of the comparison in costs for the oil utilized in the generating units you've just described?

A Are you asking me incremental costs per kilowatt hour?

Q Yes.

A Well, it would depend upon the cost of oil, but I would imagine in base load oil-fired generation in California utilities, it could range from possibly 12 to 25 mills, in that range. I think the cost of combustion turbine generation probably would be in the range of 35 to 40 mills per kilowatt hour.

Q You are talking in terms of up to twice as much, is that correct?

A That would be my estimate, Mr. Bellingham.

Q Now, I'd like to call your attention to the year 1975, as far as your company is concerned. Do you know how much you gained in total load upon your system last year, as compared with the previous year, 1974?

A The increase in load in 1975 from 1974 was approximately 5.4 percent.

Q Have you analyzed this insofar as determining the reasons for this increase?

A Yes. One of the reasons that -- well, there may be two or more reasons. One is the economy in our service area, or the area served by the Washington Water Power Company, has been fairly stable over the last several years. We feel that we have not suffered the effects of the recession as bad as other parts of the country; at least it has not had as serious an impact on us. Number two, we have had quite a drastic shift in the habits of the people in heating their homes, of going from gas to electricity in the last several years.

Q Regarding the heating of homes for electricity, do you have any figures as to the year 1975, as to the percentage of new homes that were heated by electricity that involve your customers?

A Yes, sir, Mr. Bellingham, we serve both natural gas and electricity in our service area, so we do have a percentage of the customers that take gas heat and the customers that opt to go to electric heat. In 1970, in new homes and apartments, 31 percent of the customers had electric heat installation in new homes in the year 1970 -- 44 percent of our customers used electric heat in 1970 for new homes and apartments, and 53 percent of the customers used gas heat, and 3 percent, I have here, used oil heat.

Q That was for the year 1970?

A Right.

Q Now do you have similar figures for the year 1975?

A In 1975, 85 percent of our customers, on new installation, used electric heat and 15 percent used gas heat.

Q Now I think you've been asked as to studies and problems and so forth, relative to utilization of coal in building a plant in your load area, previously upon cross-examination. I'd like to ask you if anybody in your company in previous years has gathered information, and made it available to you, regarding the possible shipping cost by Burlington Northern, or any other railroad, for the shipment of coal to possible sites for generation in your area?

A Yes, sir, we have contacted the Burlington Northern on several occasions. Mr. Van Hersett in our company has made contact with the Burlington Northern, and Mr. Meyers at one time met with an official of the Burlington Northern; I think Mr. Shenker referred to that memorandum yesterday. More recently. in October of 1975, Mr. Van Hersett made further inquiries of the Burlington Northern of the approximate shipping cost of coal.

Q Now then, I'd like to hand you what has been designated as Applicant's Exhibit number 212 and ask you what that purports to be?

A This is a memorandum from Mr. Lloyd Meyers to the files regarding a meeting he had with Mr. Powe of Burlington Northern, and the approximate cost of shipping coal from various points in Montana to localities in or about our service area.

Q And who is Mr. Meyers?

A Mr. Lloyd Meyers is an engineer in the power supply department.

Q And the date of that memorandum is what?

A October 10, 1974.

Q And what was this memorandum to be utilized for?

A This memorandum was to acquire some knowledge of the cost of shipping coal from areas in Montana to points in or about our service area.

Q And, insofar as you know, was it prepared in the usual and ordinary course of business of Washington Water Power Company?

A Yes, sir.

Q The memorandum discusses, does it not, two possible generating sites?

A It uses two sites as a delivery point for the coal. It refers to Sand Point, Idaho as a place where the coal would be delivered, and also to Bonners Ferry, Idaho.

Q Right. And the point of origin listed, is what?

A Hardin, Montana.

Q Now then, why is the destination indicated as Sand Point and Bonners Ferry?

A Well, I believe these are two places that could be considered as possible sites for coal fired generation in the vicinity of our service area.

Q And how far is Sand Point from Spokane, approximately?

A I'd say Sand Point is about 80 miles, approximately, northeast of Spokane.

Q And how far is Bonners Ferry from Spokane?

A That would be another 20 to 30 miles.

Q Now, then, immediately to the right of the Hardin to Sand Point indication, I see some figures that have been put in by hand, as distinguished from typing. Do you know what those figures indicate?

A They indicate, I think, mills per ton mile. I think it was just some handy reference of comparing cost.

Q And, do you know who did those?

A I believe these were done by Dave Van Hersett.

Q MR. BELLINGHAM: At this time we offer into evidence, Applicants' Exhibit number 212.

MR. SHENKER. I just have one question about the exhibit, if I cculd ask the witness.

HEARING EXAMINER: You may voir dire.

Voir Dire by Department of Natural Resources and Conservation

By Mr. Shenker :

Q Mr. Nogle, you previously produced this for us, sir, and when you did so, you blocked out the material that appeared in the second line. What was blocked out?

A You have a copy that -- my copy is blocked out, also.

Q So is mine; it always has been. I don't know what was in there and I'd like to know. Coal deliveries from someplace --

A Every copy I have here is blocked out; I would make a guess, now I'm making purely a speculative guess, that it might have been Powder River Basin.

Q Where?

A Powder River Basin.

Q Okay, why do you make that guess?

A I just inquired of Mr. Meyers and he thought that's maybe what it was.

MR. BELLINGHAM: Is Mr. Meyers sitting here?

MR. NOGLE: Yes, sir.

MR. BELLINGHAM: And you have conferred with him, have you?

MR. NOGLE: Yes, I have.

MR. BELLINGHAM: Yes, prior to making that statement?

MR. NOGLE: Yes, I did.

MR. SHENKER: Why don't we take a vote among you and Mr. O'Kelley and Mr. Meyers and see what everybody thinks the consensus should be? I have no objection to the Applicants' Exhibit number 212.

HEARING EXAMINER: Very well, Applicants' Exhibit number 212 is admitted.

Redirect, by Applicants

By Mr. Bellingham (continuing):

Q Mr. Nogle, you are reasonably certain it referred to some geographical point, isn't that correct?

A I believe it did.

Q Now, then, calling your attention to Exhibit 213, it is listed there the rates by Burlington Northern from Hardin to Sand Point, is that correct?

A Yes, sir.

Q And the rail miles are listed as how many?

A Six hundred and sixty four.

Q And following that, we have figures indicating how much it would cost, per ton, using Burlington Northern cars; and that is listed as how much?

A Seven dollars a ton.

Q And then, you have following that a figure listed as to the tons, using Washington Water Power Cars; is that correct?

A Yes, sir. That's $5.50 per ton.

Q And now, calling your attention to the second group, Hardin to Bonners Ferry, how many rail miles are indicated there?

A Six hundred and ninety nine.

Q And the cost there, per ton, using BN cars, is how much?

A That was $7.35 per ton.

Q And the cost per ton using WWP cars is how much?

A That is $5.85 per ton.

Q WWP refers to your company, does it not?

A Yes.

Q Now you previously indicated that somebody from the right hand side, immediately to the right of what you have been testifying to, has indicated the cost in mills per ton mile; is that correct?

A Yes, sir.

Q And following the Hardin to Sand Point, using BN cars, the mills per ton mile are listed as what?

A 10.87.

Q Now then, have you had the opportunity recently to check that figure out?

A Yes, I did.

Q Do you find that figure to be correct?

A No, we did not.

Q Well, what is the correct figure?

A As I recall, it was 10.54.

Q There has been a lot of talk recently about the merits of using calculators versus slide rules amoung your engineers. Do you know which was used in setting up the impact figure?

A No, I do not, but I expect it might have been the slide rule.

Q Are you calculating the correct figure there?

A I was attempting to. I'm not sure I know how to use this calculator.

(Pause)

Q Mr. Nogle, perhaps you should go back to the slide rule.

A I believe you are right.

Q What figure do you get?

A I got just 5 percent. I couldn't extend it out further than that. I think it was 10.54, right.

Q I think that's correct. Now then, the figure for mills per ton mile, using WWP cars, your own cars, from Hardin to Sand Point, is how much as indicated on the exhibit?

A 8.28.

Q And dropping down below from Hardin to Bonners Ferry, how many mills per ton mile, using Burlington Northern cars?

A 10.52.

Q And what about your own cars?

A 8.37.

Q Now then, calling your attention to the paragraph immediately following the figures and the points, it's indicated that the rates were expected to hold through what year?

A Through 1974.

Q And would you read the next sentence, please?

A "Mr. Powe estimated rates to have increased 50 percent in the last two years, with most of this increase last year. He expects rates to continue to escalate rapidly, at least in the near future."

Q I will now hand you what has been marked as Applicants' Exhibit number 213. Do you have a copy before you?

A Yes, sir.

Q What is the date of that particular exhibit?

A October 8, 1975.

Q And what does this exhibit purport to be?

A This is a memorandum to the files from Dave Van Hersett summarizing a conversation that he had with Burlington Northern officials.

Q And who is Dave Van Hersett?

A He's a power development engineer in Washington Water Power Company.

Q And does this particular exhibit bring up to date the previous exhibit insofar as transportation rates are concerned?

A Yes, sir. That is the purpose of this memorandum.

Q And does this particular memorandum, in the first paragraph, refer to the previous memorandum which has been marked as Applicants' Exhibit number 212?

A Yes, it does refer to the rates quoted last year in the memorandum of October 10, 1974.

Q Was this memorandum, and I'm referring to Applicants' Exhibit number 212, insofar as you know, prepared in the usual and ordinary course of the business of your company?

A Are you referring to the new Exhibit 213, or --

Q I'm sorry, did I refer to 212?

A I thought you did, sir.

Q Well, I'm referring to Applicants' Exhibit 213.

A Yes, Applicants' Exhibit 213 -- that refers to a memorandum that was made in the ordinary course of business of the Washington Water Power Company.

Q And was 213 prepared in the usual and ordinary course of business of your company?

A Yes, sir.

MR. BELLINGHAM: We now offer into evidence Applicants' Exhibit 213.

HEARING EXAMINER: Let's take a ten-minute recess.

(RECESS AT 10:07 A.M.)

Following a brief recess, the hearing reconvened at 10:20 A.M. on January 22, 1976.

HEARINGS EXAMINER: All right, we will proceed.

CONTINUATION OF EXAMINATION OF GLENN F. NOGLE

Redirect, by Applicants

By Mr. Bellingham (continuing):

MR. BELLINGHAM: I think we offered Exhibit 213 into evidence.

MR. SHENKER: No objection.

HEARINGS EXAMINER: Very well, Exhibit 213 is admitted.

Q Now, then, Mr. Nogle, calling your attention to Exhibit No. 213, what is the background of this particular exhibit as represented in the first sentence?

A In the first sentence I believe it refers to Mr. Van Hersett's meeting with the gentlemen from the Burlington Northern.

Q And who was that?

A Mr. George Powe, Mr. Gary Rute and Mr. Ray Enhofer.

Q Now, then, will you read the second sentence, please?

A "The rates as quoted last year and recorded in our memo dated October 10, 1974, are to be increased by an escalation factor of 14.55%."

Q Now, then, it refers to a memo dated October 10, 1974. Is it your understanding that that reference is to Applicants' Exhibit 212?

A Yes, sir, that is my understanding.

Q Now, then, taking up the first arabic 1 paragraph, headed

"Burlington Northern Rates," it indicates the amount of mileage from Colstrip to Spokane, is that correct?

A Yes, sir, it's 700 miles.

Q And are those two locations the locations covered by this particular memorandum?

A Yes, sir.

Q Now, then, under "Colstrip to Spokane," it gives the figures per ton, using both BN cars -- Burlington Northern -- as well as WWP -- Washington Water Power Co. -- cars, does it not?

A Yes, it does.

Q And following that, in paragraph number 2 it gives an effective rate with your own cars, is that correct?

A Yes, sir.

Q In view of the fact that we are interested, mainly, I should say, in the mill per ton mile, paragraph 3 indicates the recommended rate for planning purposes, is that correct?

A Yes, sir.

Q And how many mills per ton mile does that particular paragraph indicate?

A It indicates 12.03 mills per ton mile.

Q For the 700 mile haul, is that correct?

A For the 700 mile haul, Colstrip to Spokane.

Q And would that be using WWP cars or Burlington Northern cars?

A That would be using Burlington Northern cars.

Q Is there anything in this memorandum indicating the millage rate per ton mile using Washington Water Power Co. cars?

A Yes, I think it's on the last page of the memorandum, page 4.

Q And what is the millage rate there?

A If the Water Power owned the cars, the millage rate per ton mile would be 10.93 mills per ton mile.

MR. BELLINGHAM: I have no further questions.

HEARINGS EXAMINER: Mr. Shenker, re-re-cross?

MR. SHENKER: I'm on my first re, Carl.

HEARINGS EXAMINER: First re? All right, re-cross.

Re-cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q The question Mr. Bellingham first asked of you on redirect examination, Mr. Nogle, was why did you want to go to Colstrip 3 & 4. I think I understand some of that answer, but I am a little perplexed by the way you described the growth of the company -- I should say the lack of growth of the company, when you said, "We lost a year's growth." I suppose another way of saying that is, "We have managed to effect conservation for a year in order to reduce growth." Is conservation for the purpose of reducing growth not a purpose for your company?

A Conservation for reducing growth would be I think what we're really talking about as conservation is. I think I referred to a year's load growth. I was referring to the fact the effect that we had on conservation in '73-'74 amounted to approximately the same amount of growth that we would have experienced in a normal year's business, and effectively it set the load growth that we have in our company one year further along the line.

Q Yes. Well, I'm not sure that it's written someplace in stone for the minds of man that one must always have growth to stay in business. Why is the Washington Water Power Company so committed to that concept of growth?

A I don't know that we're committed to the concept of growth, Mr. Shenker. I think we're committed to the concept of meeting our customers' requirements and to best anticipate our customers' requirements, we're anticipating that we'll continue to have growth.

Q You gave us some statistics, as did Mr. Knight before you, Mr. Nogle, on heating of homes. It showed 44% in 1970 of the homes which you serviced were electric, and 53% were natural gas. I take it Washington Water Power has a monopoly in the Spokane area and no one else can service natural gas or electricity into the area. Is that right?

A That's right. Excuse me, these are our customers in the Spokane area. There are REA's that serve the Spokane area.

Q This is not limited to the Spokane metropolitan area, this is your entire service area you're talking about?

A This is our entire service area and it's our customers.

Q I see. Can you tell me how many housing starts there were in 1970?

A No, I cannot tell you how many housing starts there were. I can tell you how many new customer hookups we had.

Q Yes, you've given us that figure in percentage terms. Now, in 1975 can you tell us how many housing starts there were?

A Not housing starts per se.

Q All right. You don't supply oil for home heating, do you?

A No, we do not.

Q So the percentage terms you have given us, I take it, are some sort of an estimate that you have made based upon what you think oil companies have done by way of supplying home heating?

A I think this includes the number of customers who had oil, updated oil permits.

Q I didn't hear that.

A The number of oil permits that were issued for new home installations.

Q Oil permits?

A Yes.

Q That's taken from building permits, I take it?

A Yes, sir.

Q And I take it that in the year 1975 there were zero building permits for oil hookups for home heating?

A There were two that I show.

Q Two?

A That had no influence on the percentage.

Q Well, obviously you filled the field with your 85% plus 15% in the figures that you gave to us. Do you have any idea, Mr. Nogle, whether housing starts in the Spokane area were up or down in 1975 as compared to 1972?

A I couldn't tell you exactly whether housing starts were down. The number of customers we connected in 1975 was slightly less than it was in 1972.

Q Customers that you connected yourselves?

A Yes, new customers.

Q Well, in looking at the reasons why you went to the Colstrip Units 3 & 4, back to the time frame in which you began -- 1972 -- Mr. Nogle, you of course had to consider other alternatives that might have been available to you at that time, isn't that right?

A Yes, sir.

Q Now, one of the alternatives that was available to you at or about that time was participation in the Skagit project, nuclear project, right?

A I think it was on or about that time, yes.

Q How did you decide what percentage you would take from Colstrip and what percentage you would take from Skagit?

A I don't know that I could really say how we decided which percentage. I think originally that we were looking at 10% of Colstrip, and this was a participation derived at probably with all the participants, or interested participants, and probably the same type of arrangement was worked at Skagit.

Q That doesn't give me much in the way of definitive information, Mr. Nogle. Maybe I can help you some, sir. It is true, is it not, that as late as February 8th of 1974, some eight months after the application for the Colstrip Units 3 & 4 was filed, that the Board of the Washington Water Power Company had still not determined what percentage they would participate in Skagit? That's true, isn't it?

A I imagine it must be. You're obviously reading from something or have that information.

Q Yes, the excerpt of the Board minutes of the Washington Water Power Company that you supplied for me. Now, tell me, Mr.

Nogle, when did Washington Water Power finally decide what percentage it would ask for from Skagit?

A Well, I think we signed probably a letter of intent on 5% and I'm not sure of the exact date of that, but I think it was in the summer of '74.

Q What's the total output projected for the Skagit project?

A They're 1288 megawatts, each unit.

Q And your 5% is supposed to generate some 73 megawatts of peak for you?

A We have a 5.66%.

Q And it should generate 73 megawatts for you, right?

A Yes, sir.

Q Yes, that's right. Now, of course, if you had decided that you were going to have a 10% participation in the Skagit, that would be an extra 73 megawatts, wouldn't it?

A Not quite. 5.66% was 73, 10% would not quite be that much.

Q All right, sir. If you had decided that you were going to have twice 5.66%, or 11.32%, then you would have an additional 73 megawatts?

A That is correct.

Q So the fact of the matter is, Mr. Nogle, even after your company had signed its letter of intent to participate in Colstrip, even after the application was filed for the Colstrip units, that your company was still juggling its alternatives to determine where it wanted to find resources for its load over the years projected? That is true, isn't it?

A That's an ongoing situation all the time.

Q It still is true?

A It still is true.
Q And you expect it to continue to be the case, don't you?
A Yes, sir.
Q Did I correctly understand that you told Mr. Bellingham that your need for additional resources in the time frame of 1980 to 1986 was for energy and not for peak?
A Our primary concern is energy and not capacity, not peak.
Q If that's true, Mr. Nogle, then why do you have the Colstrip Units 3 & 4 as a resource for peak rather than solely for energy?
A Any base load resource provides both capacity and energy, and you consider it will supply capacity or peaking power as well as it will supply kilowatt hours of generation.
Q Just as it is also true that despite the general references that you and others have tried to make to hydro facilities as only peaking facilities, you certainly have them available and resource budget them for energy, as well, isn't that true?
A Yes, sir.
Q And any facility that you have that you list as a peaking facility to the extent you use it during the time that you use it is supplying average energy, isn't it?
A Yes, sir.
Q Can you tell me what your load factor is on your hydro units today?
A System load factor on the hydro units --
Q Out comes the slide rule.
A Yes -- (PAUSE) Approximately 46%.
Q That means that 46% of 8,760 hours in the course of any year

you're using hydro for average energy, is that right?

A I don't know that I agree with the way you said that, but --

Q When you set it up as a load factor in a percentage term, are you not referring to the number of hours during the year in which you are using that load delivering average energy?

A I don't think I'd phrase it that way, Mr. Shenker.

Q How would you phrase it?

A I would say that the hours that we're using the hydro resources we have an average annual output from those resources under critical water conditions of approximately 45%.

Q Okay. Now you've put in an interesting phrase. "Under critical water conditions."

A This was the load factor I gave you, sir; it was based on critical water.

Q But that assumes a fiction, doesn't it? It assumes a critical water condition that did not occur during that year, or any particular year, until you go back to 1932?

A It specifies what we call the firm power output of these projects. It is determined on the reoccurrence of the 28-32 -- 1928 to 1932 water conditions. This is what we call our firm power resources.

Q You are postulating, then, when you look at the need for Colstrip 3 & 4, that you will only use your hydro facilities a little less than half time, 45%?

A I use my hydro facilities all the time. I'm postulating that the average output would be 45% of the peaking capability, over a period of time.

Q Which is to say that you do have the power available in peak capacity from hydro if you needed to supply that for a greater call upon your energy than you had averaged out in your projections, isn't that what peak's all about?

A All right, I have resources available on call. I may not have the water to run them, but I have the resources available on call.

Q All right, if we can just use sort of rough figures to illustrate this, in your last year projected, for example, you have almost 1900 megawatts in peak and almost 1100 megawatts in average energy on your system firm loads.

A Yes, sir.

Q Your total loads are 2250 and 1155. Let's, for the purpose of ease in computation, knock off 30 megawatts from your average energy and call that 1125, and then we'll have the peak load being twice as great as the average energy, right?

A All right.

Q Okay. Now, what that tells me, as I understand it, is if in the year 1985-86 there is a time period in which you are called upon to deliver more than 1125 megawatts of power, you will have 100% more of that power available to deliver it at peak times, right?

A Yes, I have the availability to deliver power over 1125 megawatts, yes.

Q And you have an additional 1125 megawatts available for peak delivery?

A Delivery on the peak hours, right.

Q The peak hours are not always the same, are they?

A Year in and year out are you referring to?

Q Yes, sir.

A No, sir.

Q Therefore, you must have your peak capacity available for delivery almost all the time, don't you?

A I would say the months of December and January, when we really experience a cold load, it could occur almost any time in those months, yes.

Q Sure, and you know, therefore, that you have to have the peak available on call, right?

A Yes, sir.

Q What I don't understand, Mr. Nogle, is why you don't call on peak to service energy when you think you have an energy deficiency.

A Would you mind repeating that, sir? I don't believe I understood your question.

Q What I don't understand, Mr. Nogle, and would you help me on, is why don't you draw upon peak to deliver energy when you have an energy deficiency?

A Mr. Shenker, the energy that you can get out of a plant is the function -- of a hydro plant is the function of the amount of water you have available to run through your turbines. Now, if I add, for just an easy example, if I had to run 100 megawatts through a plant for a day and that was all the water I had, and I had the capacity available or the turbine capacity so I could run 200 megawatts for 12 hours, I could do that, but I couldn't run zero for the rest of the day.

Q You could run less for the rest of the day.

A I would have no more water left. Your average energy from a hydro plant is a function of the water that you have to run through your turbines. It's a kilowatt hour type of a computation.

Q And you want me to understand, I take it, that if you have twice as much peak capacity as you have average energy available that you cannot dip into your peak capacity to service your energy, even when you have peak surplus and energy deficiency? That's what you want me to understand?

A Yes, that's correct. We cannot do that.

Q Okay, I have your testimony on it then. Now, taking a look at Exhibits 212 and 213, Mr. Nogle, memoranda regarding Burlington Northern coal transportation rates. I take it the Washington Water Power Company is still seriously pursuing those studies in order to build your own plant?

A Yes, sir.

Q Have you read a study prepared by Mr. Robert Pettibone of the Gibson-Hill Company in connection with this hearing?

A No, I have not.

Q Did anybody ever tell you about that one?

A I think I have heard of the study mentioned. I have not read it. I've not even discussed it with anybody.

Q Did anybody inside Washington Water Power Company say, "Oh, my gosh, there's a study by Bob Pettibone. We'd better take that one into consideration before we build our own plant," or words to that effect?

A To my knowledge, nobody in the Washington Water Power has read that study, although I could be wrong, I'm sure.

Q There also are a couple of studies prepared by Roger Hofacker of the Montana Power Company dealing with the shipment of coal by unit trains. Have you read any of those studies?

A No, I have not.

Q Do you know if anybody in the Washington Water Power has done so?

A No, I do not know.

Q Do you know if anybody in the Washington Water Power Company has been advised to be careful before you build your own plant with the unit train shipment of coal, because there's some studies that the Montana Power Company people have done that tell you to be careful?

A I'm not aware of those studies, but possibly we will surely take a look at them before we go ahead with much further investigation of unit train coal.

Q Good.

A I think we felt that our best information from the cost of supplying coal, hauling coal, would be to get in contact with Burlington Northern.

Q I agree with you.

MR. SHENKER: Thanks very much, Mr. Nogle. Nothing more at this time.

HEARINGS EXAMINER: Mr. Meloy.

MR. MELOY: I don't have any other questions, Mr. Davis.

HEARINGS EXAMINER: Mr. Graybill? (No response) Very well, do you have anything further, Mr. Bellingham?

MR. BELLINGHAM: No, sir.

HEARINGS EXAMINER: Very well. While the witness is present, Applicants' Exhibits No. 20, 20-A, -B, -C, -D, and Applicants' No. 115-D are admitted. You are excused, Mr. Nogle. Thank you, sir.

(WITNESS EXCUSED)

MR. BELLINGHAM: We will call Mr. Glen Bredemeier.

GLEN E. BREDEMEIER, called as a witness by the Applicants, having been first duly sworn upon his oath, both as to his written direct testimony and as to the oral testimony to follow, was examined and testified as follows:

(THE WRITTEN DIRECT TESTIMONY OF MR. GLEN E. BREDEMEIER WAS DIRECTED TO BE INSERTED AT THIS POINT.)

STATEMENT OF TESTIMONY OF GLEN E. BREDEMEIER

My name is Glen E. Bredemeier and my business address is 621 S. W. Alder Street, Portland, Oregon 97205. I am employed by Portland General Electric Company as Vice President.

I received a Bachelor of Science degree in electrical engineering from Oregon State University in 1942 and was licensed as a registered professional engineer in 1947. Other studies include attendance at the Stanford Executive Program in 1966.

Following employment with the General Electric Company and service with the U. S. Navy, I joined Portland General Electric Company in 1946. In 1953, after experience in the Engineering and Power Production Departments, I joined the staff of the Intercompany (power) Pool at Spokane, Washington. In 1961 I was appointed Manager of the Power Operations Department. I was elected Vice President effective January 1, 1975.

My responsibilities are in the areas of system load dispatching, scheduling of power plant operations and power interchanges, power planning activities, pooling and coordination, power contracts, hydro generation and system communications.

Portland General Electric Company, incorporated in Oregon in 1930 as successor to Portland Electric Power Company and its predecessors, has principal offices located at 621 S. W. Alder Street, Portland, Oregon 97205. The company is an electric utility engaged in the generation, purchase, transmission, distribution and sale of electricity in the State of Oregon. Together with its predecessors, the company has been furnishing electric service for 85 years. Its service area is a 3,350 square mile area within a state approved area allocation of 4,250 square miles including 54 incorporated cities of which Portland and Salem are the largest. The population of the service area at the end of 1974 was approximately 972,000. At September 30, 1975 the company served 400,557 customers, constituting about 42% of the state's electric customers. The company has approximately 2,070 regular employees.

Electric energy sales to ultimate consumers for the 12 months ended September 30, 1975 amounted to 10,836,065 megawatthours. In such period 49% of the company's operating revenues was derived from residential service, 31% from commercial and small industrial users, 12% from large industrial users and 7% from others.

The basic economic activities in the company's service area are lumbering, wood products, pulp and paper manufacturing, diversified agriculture, food processing, primary and fabricated metal producing, and the manufacture of clothing, machinery and electronics equipment. Portland is the major distribution and retailing center for Oregon, southern Washington and most of Idaho, in addition to being a major west coast shipping port.

The company owns eight hydroelectric generating plants, all in Oregon, with net peaking capability of 661,000 kilowatts. It also has six jet-engine type combustion turbine-generator units, having a cold weather capability of 385,000 kilowatts, and industrial type combustion turbine-generator capability of 439,000 kilowatts. Four of the jet-engine type units are located in the Harborton area in Portland and two at the company's Bethel substation near Salem. The industrial type units are located at Beaver on the Columbia River approximately 60 miles northwest of Portland.

The jet-engine type units can operate on either petroleum distillates or natural gas, while the industrial type units can operate on crude oil, a variety of petroleum distillates or natural gas.

The company has a 2.5% interest in the nominal 1,400 megawatt Centralia coal-fired generating plant in the state of Washington, and also owns a six megawatt diesel generating plant.

The company has long-term contracts with Washington Public Utility Districts owning hydroelectric projects on the Columbia River. The company has agreed to purchase portions of the output of these projects and to pay a proportionate part of the annual cost and is entitled to the same proportion of the output. About 870 megawatts net capability is currently available from these projects, although this amount will be reduced in the future by withdrawals by the owning utility districts.

Portland General Electric Company's largest resource is the 1,130 megawatt Trojan nuclear plant which began power production December 23,1975. The company will own 67.5% of the output.

The company also obtains power from other sources. It has purchased various amounts of power derivative from the construction of large storage reservoirs in Canada pursuant to the Columbia River Treaty for such development. The company purchases 10% of the output from the Hanford nuclear project sponsored by the Washington Public Power Supply System in the state of Washington. From time to time the company enters into various purchase and exchange agreements with other Northwest utilities (including the Bonneville Power Administration) and with California utilities.

In addition to Colstrip Units 3 and 4 the company currently plans to use, in meeting its estimated load requirements, output from new generating resources as follows: (1) 67.5 percent of 1,130 megawatt Trojan nuclear plant in 1975-76, as previously mentioned; (2) conversion of the Beaver combustion turbine plant to a combined-cycle operation in 1977-78 for a capability increase of about 150 megawatts; (3) a 500 megawatt coal-fired plant near Boardman, Oregon in 1980; (4) 10 percent ownership in the nominal 1,300 megawatt WNP-3 and 5 nuclear units at Satsop, Washington in 1982 and 1985; (5) 65 percent of the 1,260 megawatt Pebble Springs No. 1 nuclear unit in 1983; and (6) a like amount from a second unit in 1986.

Applicants' Exhibit No. 19A consists of a bar chart showing the company's estimated peak responsibility and resources excluding Colstrip Units 3 and 4. Exhibit No. 19A shows that, essentially through 1984-85, the company's projected peak resources, exclusive of Colstrip Units 3 and 4, would be adequate to meet its total peak load requirements, including an allowance for reserves.

Peak load, of course, is the anticipated maximum demand for service by our customers, and can be expected to occur during hours of the winter days in which the weather and temperature act to increase the demands of our customers. We forecast on the basis of normal rather than extreme winter weather. It is apparent that by relying on the output of Portland General Electric Company's nearly 1,000 megawatts of combustion turbine capacity, we do not appear to have a capacity problem on the Portland General Electric Company system assuming that other new resources will be completed on schedule.

Applicant's Exhibit No. 19B consists of a bar chart showing the company's estimated peak responsibility and resources including Colstrip Units 3 and 4. Exhibit No. 19B shows that the addition of Colstrip Units 3 and 4 would be sufficient to eliminate any anticipated peaking deficiencies and further would be very useful in reducing reliance on combustion turbines which are expensive to operate.

Applicants' Exhibit No. 19C consists of a bar chart showing the company's estimated energy loads and resources excluding Colstrip Units 3 and 4. Exhibit No. 19C shows that without Colstrip Units 3 and 4 and under the area contractual planning assumption of critical hydro supply conditions, an energy deficiency exists during all years. Again, this is even after the timely completion of other planned resources. Reliance on combustion turbines for extensive, base-load operation using costly petroleum-derivative fuel in conflict with national policy could, if such fuel would be available, eliminate this deficiency in most but not all years. It is readily apparent from Exhibit No. 19C that Portland General Electric Company's need is for base load energy production.

By way of amplification, energy load is the total cumulative requirement of our customers during some given period of time expressed in kilowatthours or megawatthours. It is often also expressed as an average in kilowatts or megawatts for a given period of time such as a year. Some minimum portion of that load is always present to be served even on holidays and in the middle of the night. A generating plant that is put on the line and loaded to run essentially around the clock, day in and day out to meet this need, is considered a base load plant. A coal-fired plant generally falls in this category. A combustion turbine plant is not desirable for operation as a base load plant, although it is excellent for peaking purposes and to meet emergencies.

Applicants' Exhibit No. 19D consists of a bar chart showing the company's estimated energy loads and resources including Colstrip Units 3 and 4. Exhibit No. 19D indicates that the addition of Colstrip Units 3 and 4 will reduce, and in several of the years, eliminate the indicated energy deficiencies.

Applicants' Exhibit No. 19 is a more detailed tabulation which includes the data from which Exhibit Nos. 19A through D were developed. Peak is summarized on the upper portion of the sheet and energy on the lower portion. Anticipated output from Colstrip Units 3 and 4 is included. The estimated loads and resource schedules depicted thereon are those currently submitted for use in the annual area planning study, the "West Group Forecast", which is expected to be published during the first quarter of 1976. Since most of the numbers were adapted from the 1975 report they may be expected to vary slightly in the 1976 report when completed, but there should be no substantial change unless the resource schedules become subject to further delays. This exhibit is the identical exhibit in use by Portland General Electric Company in its current rate case proceedings and in its hearings before the Atomic Safety and Licensing Board of the Nulcear Regulatory Commission in connection with its planned Pebble Springs nuclear generating plant. Exhibit No. 19 further emphasizes Portland General Electric Company's need for base load energy generation by 1980.

Again, in Exhibit No. 19, the body of the tabulation includes only a minimum of combustion turbine energy production considered probable to support peaking and emergency operation. Additional energy production, theoretically achievable, is shown on the bottom line. It is not considered desirable to rely on this costly use of what may be difficult to obtain petroleum fuels for base load energy production. Local environmental considerations may provide a further limitation on realization of needed energy production.

In view of the foregoing considerations, it appears that the energy production from Colstrip Units 3 and 4 would be welcome, if available, within the next several years. It is the only additional base load energy resource which appears to be achievable within the time frame of its anticipated completion.

With respect to Portland General Electric Company load forecasts, estimated load requirements of the company are based upon the efforts of a coordinated committee with representation from a number of functional areas throughout the company and are updated annually in the fall. The forecast begins with the number of residential customers to be supplied. This, in turn, is a function of the population of the service territory. Estimates of new living units by type and nature of load are correlated with the forecast of population, which is provided by a company economist with considerable experience in this field. Trends in usage for various types of residential customers are reviewed, and a forecast of total residential load is prepared from the foregoing analyses. Residential energy load comprises about 44%

of Portland General Electric Company's total system load.

Our personnel have direct contact with large industrial customers and are thus advised of their anticipated plans with respect to plant construction and operation.

Thus, residential, large industrial, and the remainder of the load components consisting primarily of commercial and small industrial customers, are categories projected and compared with past trends in arriving at the composite system load forecast.

Regarding energy conservation efforts of the past several years, indications are that customers are continuing to control usage to some extent and this combined with current economic conditions, particularly in the industrial sector, seems to have been reflected in load levels. It appears that we have lost over a year of normal load growth since 1973, and this is reflected in our current load forecast which has been reduced from last year's. Growth of load now appears to be resuming.

Reviewing our company's projected rate of growth compared to our historical experience, Exhibit No. 19, in which we reviewed the projected load and resource balance, has an overall average 7.07% energy load growth compounded annually from the first to the eleventh year shown thereon. This is consistent with long-term trends for our company for various periods dating back to 1905. On Exhibit 19 the energy load growth subsequent to 1979-80 has been projected at only an overall 6.5% growth rate.

Portland General Electric Company has not conducted any advertising programs designed to promote the use of electric energy for several years. Our emphasis has been on wise and efficient use of energy with considerable emphasis on methods of conservation.

In the event that our load growth turns out to be lower than forecast, construction periods for new facilities could be stretched out. If the converse occurs, it could be necessary at best to build and operate at high cost, short lead-time facilities which use scarce fuel oil such as combustion turbines. At worst, it could mean curtailment of load and attendant economic difficulties.

We feel the construction of Colstrip Units 3 and 4 is necessary at this time because these units will provide badly needed base load energy that will first become available during the time frame when there will be considerable need. Without these units, the alternatives appear to be either to resort to operation of units such as combustion turbines which consume costly and potentially scarce gas or petroleum fuels, or to expose the customers to brown-outs or failure to provide service.

All exhibits referred to above were prepared under my supervision, direction and control and are true and correct.

Applicant's Exhibit 115C is the Portland General Electric Company's Annual Report to its stockholders for the year 1974. The exhibit is one prepared every year by the company and was prepared in the usual and ordinary course of business of the company.

MR. BELLINGHAM: At this time we offer into evidence Exhibits 19, 19-A, 19-B, 19-C, 19-D and 115-C.

HEARINGS EXAMINER: We'll reserve any ruling. You may cross-examine.

EXAMINATION OF GLEN E. BREDEMEIER

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Well, Mr. Bredemeier, from one Portlander to another, welcome here to Montana. I've been here a little bit longer than you have, but you have to understand, we are both Sir Galahads. Do you understand that?

A Yes, I do.

MR. BELLINGHAM: I think not. I think the reference was strictly to attorneys, carpetbaggers coming into the state, and not to witnesses.

Q Mr. Bredemeier, the Portland General Electric Company better leave its carpet bag in Portland when it comes to Montana next time, or you might have the same problem that Mr. Bellingham has accused all the rest of us of. Now, sir, let's take a look at the Portland General Electric Company's projects and plans. One of the things at work for Portland General Electric Company is its own coal-fired generating station, right?

A Yes.

Q That's at the Boardman area in Oregon; you call that the Carty Station?

A We actually name it the Boardman coal-fired plant; the reservoir will be called Carty Reservoir.

Q Another of the works under way for the Portland General Electric Company is a nuclear facility that began its first initial stages of operation just a few weeks ago called the Trojan facility, right?

A That's correct.

Q Still another that you have in the planning stages and indeed going through hearings at this very moment is the Pebble Springs nuclear facility?

A That's right.

Q And still other units that you have on the planning boards and underway in various stages of completion of work would be your combustion turbine facility where you intend to install jet engine type units, right?

A No. We are adding some combined cycle generation to an existing combustion turbine plant.

Q Will those be jet engine turbines that are added?

A They will be steam turbines added to conventional industrial combustion turbine installation.

Q Well, you now have some six jet engine type combustion turbine generator units, is that at Beaver?

A No, the jet turbines are at Harborton and Bethel, near Salem.

Q All right. Four of the jet type units are located at Harborton; two are at Bethel, near Salem, right?

A That is correct.

Q Okay. And, of course, PGE, like most of the utilities in the Pacific Northwest, is strong in hydro at the very moment?

A We have hydro on our system, yes.

Q It constitutes a very substantial chunk in your resources, doesn't it?

A The hydro which we own ourselves, totally own, actually is not a very great percentage of our total resources.

Q You get even more hydro from PUD than you do from hydros that you own?

A That's correct.

Q And hydros are also made available to you through BPA and from other sources, I assume?

A From time to time, yes.

Q Well, it's fair to say, then, Mr. Bredemeier, is it not, that PGE has vigorously pursued a diversification approach in the kinds of resources that you should have available to you?

A I would not make that conclusion.

Q No? Well, you have applications under way for a mine-mouth coal-fired generating station, for some nuclear generating stations, you have construction underway for nuclear generating stations and for a non-mine-mouth coal-fired generating station. You have jet engine combustion turbines, and you have conventional combustion turbines that you either have or are looking at for conclusion of construction. You have hydro. Doesn't that sound diverse?

A That is diverse. I wouldn't say that we have necessarily pursued a course of great diversification. We have taken advantage of the resources that we could get, and have done what we've had to do in order to meet our obligations.

Q The PGE approach, Mr. Bredemeier, is to keep all your options available as long as possible, isn't that true?

A That would be prudent.

Q And that's your approach, isn't it?

A Yes, it is.

Q Of course, since PGE has underway a coal-fired generating station at Boardman, Oregon, some hundreds and hundreds of miles away from your coal source, I take it it would not be the position of PGE that it's a bad idea to have a coal-fired generating station serviced by unit trains hauling coal?

A Not necessarily.

Q No. You're doing it, and you're not doing it because it's a bad idea.

A We're planning to do that, that's correct.

Q Yet I take it also to be the general thrust of PGE, despite the diversity of its resources, that nuclear construction is sort of the wave of the future. That's where you would expect most of your resources to come?

A That is correct.

Q Trojan is the first of the nuclear plants that PGE has had go on stream, is that correct?

A Yes, it is.

Q And Trojan's operation began on December 23rd, 1975, generating how many megawatts?

A We produced at the plant at that time, the initial day of operation, a little over 200 megawatts.

Q What was the average energy that you were able to produce out of the Trojan Plant at any time before the end of the year 1975?

A Well, that's a rather difficult question to answer, for the reason that we came on line and produced power for approximately 24 hours at a pretty good average -- I would guess maybe 150, offhand -- and then we shut the plant down to make some further adjustments, so we averaged the day we ran, with the five or six days we didn't run, well, it obviously would be a very poor average.

Q And of course, the reason that Trojan was pushed to come on stream before the end of the year 1975 was that if you did not do so you would have a rather substantial financial loss in not having that plant on stream by the end of the year, isn't that true?

A We felt our rate payers would not be too happy.

Q Sure. What would have been the financial difference in not operating the Trojan Plant before the end of 1975?

A I'm told in the neighborhood of $7 million.

Q For the Trojan Plant, the Pebble Springs Plant and the Carty Reservoir-Boardman Plant, PGE is not only the project sponsor, but the taker of most of the shares of the energy coming out of the output, right?

A That's correct.

Q And I take it as project sponsor and the consumer of most of the power produced in those projects, it was fairly well the decision of PGE as to what percentage you would take?

A I would say that the ultimate split was mutually agreed upon by the prospective participants; since it was our project, why, obviously we had quite a bit of influence as to what final percentage we would take.

Q Sure. At Trojan you're going to have 67.5% of the output?

A That is correct.

Q And Trojan has an output of some 1130 megawatts?

A That's the projected capacity.

Q Who are the other participants at Trojan?

A The Pacific Power & Light Company, and the Eugene Water & Electric Board.

Q Now, if in the course of your planning you had decided that PGE really needed more than 67.5% of the Trojan, you don't have much doubt, do you, Mr. Bredemeier, that you could have convinced your partners with their minority shares that you could take, say, 70% of the output?

A Are you suggesting that after we had reached an agreement that we could change, or in the initial planning we had desired more? Obviously, we could have, if we chose, constructed the entire plant and used the entire output ourselves.

Q That's a good enough answer; that's fine. Taking a look at the Pebble Springs facility, that's right now in hearings before the Nuclear Regulatory Commission, is it not?

A It has been. It's recessed at the moment.

Q In fact, you've been recently testifying personally before the hearings, haven't you?

A Yes.

Q Did they recess so that you could come here?

A Fortunately, no. They had already recessed.

Q From Pebble Springs there are two units projected, as I understand it, one that is a 1260 megawatt unit that you now hope will come on stream in 1983, and then another one for the same amount in 1986, is that correct?

A Yes, the -- that's the correct timing, and I think we're using 1260 for that particular project, yes.

Q Roughly about 2500 megawatts between the two units?

A That's correct.

Q And you project having 65% of the output of those two units?

A That is our present contention.

Q Who are your other participants?

A We to date have not reached any contractual arrangements with other prospective participants, but we have been discussing such a possibility, and it's very likely the Pacific Power & Light Company will become a participant in this project.

Q You mean to say, Mr. Bredemeier, that 35% of 2500 megawatts is not presently on the resource table of any utility anywhere?

A I believe that Pacific Power is including a percentage in their resources. This is all planning material that we're speaking of, although we have not yet signed such an agreement.

Q How much are they proposing to have out of Pebble Springs?

A Twenty-five percent.

Q Where is the remaining 10% going to be?

A The plan is to have 10% ownership with a public agency, and those arrangements, again, are under discussion, but they have not yet been formalized.

Q What public agency?

A It would be a consortium of co-ops in the state of Oregon, primarily. I don't have the specific makeup of that planned group.

Q That's under negotiation still?

A Yes, it is.

Q If PGE wanted to take 100% of those 2500 megawatts, would you think you have that option at this point?

A Well, I think that it would hardly be fair to our prospective partners who are planning on participating if we in effect jerk the rug out from under them.

Q But at the moment no commitments have been made for the remaining 35%, at least, of the 2500 megawatts?

A We have an expression of intent.

Q When was the decision made to take 65% of the 2500 megawatts at Pebble Springs?

A The 65% at the moment really applies only to the first unit. There are no definite understandings regarding the second unit. It could very well be the same, but I couldn't project that at this time. Now, as to the initial unit, I believe that's been several years in the past when that decision was reached.

Q If you'll look at Exhibit No. 19, which you brought to these proceedings, Mr. Bredemeier, Pebble Springs No. 1 is listed there for 491 megawatts in 1983, and then 614 megawatts for the years that follow. Is that 65% of 1260 megawatts?

A No, it is not.

Q What happened to the remainder?

A You are reading the energy figures, and 65% of the available energy, which is 75% of the capacity of 1260 megawatts.

Q Oh, you mean you're going to use some of Pebble Springs for peak?

A Any project that you build has both energy and capacity components.

Q And at Pebble Springs you anticipate some 819 megawatts in 1983 on peak?

A That is what we show, yes.

Q Okay. In the previous edition of Exhibit 19 which you had prepared for the hearing last year, Mr. Bredemeier -- do you have that one there?

A Yes, I do have it. I'm trying to make sure that I have the one that's labeled "Exhibit 19."

Q It's called "Estimated Loads and Resources."

A Dated April 1975 in the lower righthand corner?

Q My copy of Exhibit 19 didn't have a date on it, but that sounds like about the right date for when it was prepared.

A Yes, sir, I have it here.

Q All right. Now, that didn't break down your resources into individual units, including Pebble Springs, for example. Would that be under "Large Thermal"?

A Yes, it would.

Q For large thermal in 1983 you had 2521 megawatts, and for energy you had 1887 megawatts.

A That is correct.

Q What would have gone into those figures at that time? Trojan and Pebble Springs #1?

A They would be included in there. There's more than that.

Q What else?

A I could verify it, but I believe that we would find as you stated, Pebble Springs #1, Trojan, the Boardman coal-fired plant, Colstrip, and the Satsap project.

Q Now, you tell us in your original statement of testimony, Mr. Bredemeier, that it is apparent, and it certainly is if one simply looks at the exhibit, that by relying on the output of your 1,000 megawatts of existing or planned combustion turbine capacity, you do not have a capacity problem on your system. Now, in order to coordinate that statement with the exhibits, maybe we should make it clear for the record -- your current Exhibit No. 19, the one that's revised December 23, 1975, has a footnote. It says, "Additional energy possible from combustion turbines." That's 551 megawatts, right?

A For a certain number of years, beginning with 1980-81.

Q Yes.

A Beginning with 1979-80, excuse me.

Q In order to come up to 1,000 megawatts on your combustion turbines, you look up the line and you find whatever combustion turbines you are using in addition to those 551, and we could find out that on energy your combustion turbines are listed as a resource of 73 megawatts from 1978 on, and on peak, your combustion turbines are listed as 999 megawatts for all the years 1977 through 1987, right?

A That is correct.

Q Is it not apparent, Mr. Bredemeier, that if you use the energy from your existing turbine generation and that turbine generation which will come on stream by 1979, that with the exception of that one year, 1979, you will have surpluses on energy?

A I have stated that if we were able to run these turbines we could eliminate that deficiency. That would not necessarily follow that there was an available surplus.

Q If you eliminate the deficiency, you don't have a deficiency. You have something called a surplus, isn't that right?

A If you go beyond eliminating the deficiency, you would have a surplus.

Q Okay. I was amused, if not interested, by the language that you chose on page 5 of your statement to describe that apparent phenomenon, at line 17, where you pointed out that if you relied upon your combustion turbines that would eliminate your deficiency in most, but not all, years. I think the more conventional way for us to use the English language to express the phenomenon would have been to say, "in all but one year," because that's true, isn't it?

A That's true according to this tabulation.

Q You also tell us in your statement, Mr. Bredemeier, that a combustion turbine plant is excellent for peaking purposes. Why is that true?

A It's desirable from a cost standpoint, because your invested capital cost per kilowatt is quite low, and it also is desirable from an operating standpoint, because generally they can be started quite rapidly and brought up to load in order to meet a peaking requirement.

Q As an energy source, you will have to use your combustion turbines in any event, even with Colstrip 3 & 4, as you now project your resources, isn't that true?

A We will have to use them to the extent we have estimated under critical hydro conditions, and we would hope to a lesser extent as hydro conditions improve.

Q You now intend to use your combustion turbines at least to the extent of 73 megawatts in every year from now through 1987 for energy delivery, isn't that true?

A Not exactly. We have estimated that for peaking and emergency conditions we would have to operate the combustion turbines a certain amount of the time each year, and in making that peaking and emergency operation, it requires some energy, and we have estimated that that companion energy is as indicated here, the 73 average megawatts.

Q So I take it your position now is that you may not have to use your combustion turbines at all, if you have sufficient additional water in your hydro systems, because with the additional energy supplied through hydro, you might be able to eliminate the need for combustion turbines?

A We would hope that would be the case; however, hydro is not always available at the time you have a capacity need, so we would still anticipate requiring some capacity operation.

Q Your hydro resources, according to your current revised edition of Exhibit No. 19, starting in the year 1980, from your own hydro and the net hydro you receive from public utility districts, is 576 megawatts, right?

A That's correct.

Q Whereas the amount of power which you hope to get out of Colstrip 3 in 1980 is 77 megawatts?

A That is correct.

Q And the additional energy that would be possible from your then existing combustion turbines would be 551 megawatts, or almost as much as the entire hydro available to you?

A As qualified with my footnote, yes.

Q Another way of looking at your 1980 projection for energy, Mr. Bredemeier, is that you now project a deficiency with Colstrip 3 & 4 that is almost five times the size of the power that you will receive from Colstrip 3 & 4?

A That is what the tabulation indicates.

Q Isn't it a fair conclusion, Mr. Bredemeier, that the 77 megawatts that you project from Colstrip 3 & 4, out of a load of 2133 megawatts, is not exactly the make or break crucial determinant of whether you hit surplus or deficiency?

A Well, this table represents a projection of the probable operation and the way in which I have set it up indicates that deficiency number, as we have just been discussing. I could just as easily have indicated that no matter what, regardless of the possibilities or probabilities, we would be able to run the combustion turbines and I could have eliminated the 346, and to follow through on your question, if I went 77 further, I presume I would eliminate that, as well.

Q Sure. If you had included the additional energy possible from then existing combustion turbines, Colstrip would have been just another 77 megawatts of additional surplus?

A No, it would have made 77 of the combustion turbines additional surplus.

Q Well, you decide, I suppose, internally which of your surplus you want to call surplus, but if you have something more than your load on hand, then you could call that surplus, couldn't you, no matter where it comes from?

A We would call it combustion turbines, because they are the units that we would shut down, for obvious reasons.

Q That's your judgment today. When you made your judgment to expand your combustion turbine output, I take it you had different views on the subject?

A You're speaking of which expansion? Generally, you mean, the various plants we've had?

Q When did you most recently decide to move ahead on combustion turbines?

A I believe we should qualify that. If you have reference to our combined cycle installation, that, of course, is a steam turbine and is not a combustion turbine. It requires no more fuel than the existing combustion turbine plant.

Q All right, when did you decide to move on a combined cycle?

A I can't recall the exact date. I would estimate perhaps two years ago.

Q You list your combined cycle expansion under combustion turbines in this breakdown, don't you?

A We do, because they are dependent upon the operation of the combustion turbines to produce the energy.

Q When did your Harborton combustion turbine plant go on stream?

A It was in the fall of 1973, I believe November.

Q By the way, when that Harborton plant went on stream, there was a little problem there because you hadn't obtained a permit in advance, thinking that you didn't need one, and some folks thought you should have gotten one. That was litigated, wasn't it?

A There was no litigation, and there were a number of misrepresentations made as to what our permit obligations were.

Q I think your position was that somebody had told you that there was no requirement to obtain a permit, so you went ahead, and then there were some administrative proceedings thereafter as to whether it was necessary to have a permit. That was the story, wasn't it?

A That would generally describe the situation.

Q Now, if we compare your revised edition of Exhibit 19 with the Exhibit 19 that you had originally prepared for these proceedings, we will find that your load forecast has gone down both on peak and energy, will we not?

A That is correct.

Q And I take it we will also find a change in your resources for the years that appear on the respective exhibits 19?

A That is also correct.

Q Now, I suppose that the reason for the diminution of the load forecast is based upon more current experience you have flattened out the forecast of what you think you'll have to need to supply your customers?

A We review that annually, and that was our most recent best scheduling.

Q For this current year in which we find ourselves at the moment, Mr. Bredemeier, your load has gone down some 88 megawatts on peak, but your surplus has gone up some 273 megawatts, so your resources must have gone up even more than had appeared earlier. Can you tell me why that's true?

A I'm sorry, sir, I was trying to follow your numbers there and I didn't quite track. Can I ask you to repeat that?

Q Right. The surplus for this current year you had originally projected at 117 megawatts in peak.

A Well, I find that as a work number on this exhibit. I'm not sure that I have the most recent exhibit with me. Yes, I will accept that.

Q Yes. And currently you forecast 390 megawatts as a surplus on peak for this very year, 1975-76, so that's an increase of some 273 megawatts in your surplus?

A That appears to be about correct.

Q But the diminution in load is down only 88 megawatts, from 2590 to 2502, which would lead to the conclusion that you must have some new resources, or additional resources that have been added for this current year, and I wonder if you could point those out for me.

A I don't immediately detect any specific item in here.

Q Let's see if I can help you, Mr. Bredemeier.

A All right.

Q One item appears to be that your reserves have gone down 100 megawatts?

A That is correct.

Q Why is that?

A Well, that's in the computation of the reserves themselves. They are estimated, and I believe that the change is a result of several minor adjustments in the recomputations that were made for that year. I'm sorry that I can't answer it more definitively than that.

Q Another big change seems to be that your BPA and Hanford #1 has gone up from 193 to 279 megawatts. Can you tell me why that occurred?

A At the instant I can't put my finger on what that change was. I'm sure that with a little reference to my notes I could refresh my memory, but at the moment I can't recall.

Q Maybe during the noon hour you can pick those up, Glen, and let me know after lunch. If we look down at the energy column for this current year again, your load has been reduced on forecast now by some 99 megawatts, but your surplus appears to be a deficiency in this current year, which is even more deficient than it was on your original forecast. As I count it, it looks like 167 additional megawatts deficient for this current year. Now, normally reducing the load would aid you some in meeting your needs so that you should not have as great a deficiency. You must have lost a lot of resources for this current year. Can you tell me what those were?

A Principally, it's because we decreased the amount of energy which we wished to ascribe to the combustion turbines in that exhibit. We have shifted that energy down to the footnoted item rather than show it as a line item up above.

Q So the fact of the matter is, you really don't anticipate in this year 1975-76 that you're going to cause brown-outs and black-outs and shortages. You're going to service your loads this year, aren't you?

A Oh, indeed, yes. We certainly anticipate doing so, and of course, this is a year we're already into, and for that reason

I put little validity into the study numbers that were prepared well in advance of the year.

Q Sure. Now you know, for example, that despite the indication of resources on hydro at some 671 megawatts, between your own owned hydro and PUD hydro which you obtain, that in fact you'll get more than that by way of hydro because the critical water isn't critical this year.

A That's correct.

Q And you also know that you will probably have to use more than 57 megawatts out of your combustion turbines this year, too?

A That we will have to use more than that?

Q Yes.

A I don't anticipate using that much, if at all possible.

Q Really? You're going to be able to make up your deficiency as appears on Exhibit 19 of 414 megawatts out of additional hydro, I take it?

A Whatever the actual deficiency turns out to be, based on our load, we anticipate that the vast bulk of it will be made up by hydro generation; that's correct.

Q There is also the possibility that you'll cover the proposed deficiency for this year by virtue of the fact that the load will not be as great as 1449 megawatts of average energy?

A That also is a possibility.

Q Sure. And one of the ways you'll try and achieve that is by conservation of energy by your consumers, isn't that true?

A That's an ongoing process, and we constantly advocate it. We wouldn't put out an impassioned plea for people to reduce their consumption in connection with this year, specifically.

Q I'm one of your customers. I get your monthly bill, as well as the monthly impassioned plea for conservation of energy with the handy watt-watcher tips, and things of that sort. That's a program that I assume you expect will bear some fruit, and will in fact result in some conservation of energy, will it not?

A You put that in the future tense. We think that it already has, and we hope to see that continue.

Q Good. Now, have you quantified the extent to which your conservation program has diminished the load demand?

A Not too definitively.

Q Have you made any mechanical, computerized or mathematical factor available in the calculation of load which will crank in the effects of conservation?

A All those effects were recognized in our determination and preparation of the load forecast. I wouldn't say that we had put that in the form of any particular multiplier or equation, to be recognized in that form, no.

Q You state in your written testimony, Mr. Bredemeier, that you view Exhibit 19 and the letter exhibits with it to emphasize your need for base load energy generation by 1980. As I read Exhibit 19, however, it would appear to me that for the two years preceding 1980, and for the current year in which we are involved, your need for energy generation is even greater than it is in 1980. Is that a correct reading of the exhibit?

A The number on the exhibit so states.

Q And after 1980, even with the projection of your 77 megawatts from Colstrip 3 in 1980, and 180 megawatts from Colstrip 3 in 1981, and 208 megawatts in 1982, 210 megawatts thereafter, and even with your projection -- I've been saying Colstrip 3; I meant to say Colstrip 3 & 4 -- even with your projection of those facilities you now propose to come on stream, you will have a greater need for energy generation in 1982 than you have in 1980, according to your current forecast, isn't that true?

A That reference is correct.

Q I assume, Mr. Bredemeier, with your responsibilities with Portland General Electric Company for meeting demand and having adequate resources available through adequate planning, that you do not anticipate that in any of those years, 1975 through 1983, you would expect to cause shortages by not having adequate energy available?

A We certainly hope that does not happen.

Q And in order to insure that your hope becomes a reality, you would bank on additional hydro that becomes available because you are not in the kind of critical water that we had 43 years ago; you would bank on the possibility of diminished load; and you'll also have the footnoted item of the additional energy possible from combustion turbines. Is that the way you look at it?

A Those things would all be most helpful.

Q And with the use of those things that would be most helpful, then you would meet your loads with resources, wouldn't you?

A Under the assumptions stated, we would expect to.

Q Before the Nuclear Regulatory Commission hearings, you have been present, have you not, sir, when testimony has been offered on an analysis of your PGE load forecasts?

A I was present during a limited portion of the time, but if I understand the particular witness or witnesses you have reference to, no, I did not stay there throughout their entire testimony.

Q Do you know Mr. Donald W. Conner?

A Yes, I do.

Q Who is he?

A He's an -- I believe he's an engineer, and he's with the staff of the Nuclear Regulatory Commission.

Q He testified in this hearing on Pebble Springs nuclear plants 1 and 2, didn't he?

A Yes, he did.

Q And it was his view, was it not, that the load forecast that you had presented in your testimony, which is identical with the load forecast we now have before us in your revised edition of Exhibit 19, was too high?

A I don't recall that statement. If you have it there, I'll accept your word for it.

Q It was under this conclusions on page 17 of his written statement.

A What is that date on that, Mr. Shenker?

Q I don't think he dated this particular paper that he offered in his testimony, Mr. Bredemeier, so I can't tell you.

A There were earlier exhibits, early in 1975, and then there were more recent ones, currently, so I don't know which you have reference to.

Q This is the most recent one. It is entitled his "Supplemental Testimony Pertaining to Power Needs."

A I see.

Q It was the position taken by some of your antagonists at the hearing before the Nuclear Regulatory Commission that your forecasted needs were so overstated that the entire output of Pebble Springs was unnecessary, isn't that true, sir?

A I believe I recall someone making such a statement.

Q In their criticism of your forecast, they were of the view that your load had remained essentially static since the second quarter of 1973. Do you disagree with that?

A Do I disagree with their statement or do I disagree with --

Q That statement.

A If essentially it would allow for some increase, I would agree, because there has been some increase.

Q How much?

A I can tell you for annual period of time, I don't have reference to the second quarters.

Q All right.

A Would you accept the calendar year 1974 over calendar year 1973?

Q I'll accept whatever you have.

A I will be giving you a percentage increase of about 1½%, and this is our socalled net system load, which is a number comparable to that we are using on this Exhibit 19.

Q Do you have a comparison for 1975 over 1974?

A Yes, I do.

Q What's that, sir?

A The actual was a little over 2.1%, and we had a lengthy strike of our largest industrial customer, and if you made a correction for that it would be somewhere in the neighborhood of 4½ to 5 percent.

Q What's your largest industrial customer?

A Publisher's Paper Company.

Q Mr. Bredemeier, what is the average growth increase which you project over the period from 1975 to 1986?

A 1975-76 through 1986-87, which is the number of years included on Exhibit 19, it's 7.07%.

Q The staff of the Nuclear Regulatory Commission had an adjustment to your forecast. Do you recall what the general difference was between their forecast and yours?

A That's why I'm a little confused, because at the time our hearing started last year we were working on the previous year's forecast, and then during that year we produced the new figures, so I'm really at a loss to know just what he has reference to.

Q Well, in your forecast for your average annual energy load your original edition of Exhibit 19 for the last year that you had shown in 19 was 1985-86, and that was 3,040 megawatts.

A That's correct.

Q It's now down to 2,889 megawatts?

A That's correct.

Q The staff adjustment after you proposed the 3,043, actually, before the Nuclear Regulatory Commission, was to bring it down to 2,850 megawatts, was it not?

A I don't have those numbers before me. (MR. SHENKER HANDS DOCUMENT TO WITNESS.)

Q Showing you a comparison of the figures before the Nuclear Regulatory Commission on Pebble Springs Nos. 1 and 2, there is the actual load from figures that you had provided, there was the forecast that you made originally and the update on that forecast that showed in 1985 3,043 megawatts, which is practically identical to 3,040 megawatts that you had projected on the original Exhibit 19. For that year 1985-86 the staff adjustment of the Nuclear Regulatory Commission suggested your load more properly should be 2,850 megawatts, isn't that true?

MR. BELLINGHAM: At this point we object to the question on the grounds that the witness has been shown one page of some kind of recommendation alluded to by Mr. Shenker. He has none of the rest of the papers or the document from which this page has been pulled, and I think it is only fair that he be entitled to look at the entire document, in its entirety, prior to the time that this line of questioning goes on.

MR. SHENKER: Either he knows what the staff's adjustment was, or he doesn't.

MR. BELLINGHAM: He's already indicated that he did not know, as I recall.

HEARINGS EXAMINER: Okay, the objection is overruled. You can answer. If you don't know or have to review other papers, you'll be permitted to.

A I believe that would be hearsay, because I do not think that this is Mr. O'Connor's exhibit. I believe this has been prepared by an intervener, not Mr. O'Connor.

Q There is no doubt but what this is not Mr. O'Connor's exhibit. Mr. Conner is the man who's the staff man, but he didn't prepare this exhibit either. The only question, sir, is whether the Nuclear Regulatory Commission staff did in fact adjust, so to speak, your proposed load forecast downward by some 200 megawatts for the year 1985-86?

A I'm sorry, I miscalled Mr. Conner's name. I had a lapse of memory there. I do not know. I'd have to read Mr. Conner's testimony to refresh my memory. This may be a correct interpretation on the part of the intervener. I don't know without reviewing it.

Q Do you have Mr. Conner's testimony here with you?

A I do not.

Q Showing you Mr. Conner's testimony, page 9 is the staff projection adjustment down to 2,850 megawatts that I just referred to?

MR. BELLINGHAM: I would suggest that the witness have an adequate time to read the document that has been put before him.

Q Mr. Bredemeier, having seen that, are you able to tell me, sir, whether it was in fact the case that the Nuclear Regulatory Commission suggested an adjustment in your load forecast?

A I see where he has made a projection, the numbers 2850, as you indicate, and that compares with the 2,888 which we ourselves project, so he is only 38 megawatts below our own projection.

Q Oh, really? I thought that in 1985-86 your original forecast was for 3,040 megawatts.

A Our original forecast was, but for the most recent hearing we had reduced it to the lower figure, so we're quite close to Mr. Conner.

Q You would accept that, then, would you not, Mr. Bredemeier, as a pretty good approximation of what your load forecast should be in '85-'86?

A It's close enough so that I wouldn't take any great exception to it.

Q Good. Now, as a matter of fact, Mr. Bredemeier, that reduction down to 2800+ megawatts for your average energy needs for 1985-86 is not a reduction of only 200 megawatts, it's a reduction of 800 megawatts, is it not, from where you were in March of 1974 on your forecasts?

A I don't know what my figure in 1974 was.

Q Showing you the document that you had produced for us from your files, dated March 1, 1974, who's CLK?

A He was an engineer that was in my department at that time.

Q All right, looking at the year 1985-1986, for your total load your average energy was 3,669 megawatts projected, was it not?

A That is correct.

Q Well, cutting your load by some 800 megawatts in your current projection is a rather sizable difference, isn't it?

A Yes, it is.

Q It's a 25% reduction in load. How do you explain that?

A I explain that as a natural derivative of constant re-examining and reforecasting of our loads, so that what we currently have is our current best judgment. It's apparent that the current forecast is lower than the forecast that we had made in 1973, the fall of 1973, and only time will tell which is correct when we get there.

Q Well, if we understand, then, 1973 was higher than 1976, was 1973 also higher than 1974 in its projection of load?

A I believe that we dropped our forecast in 1973 and dropped it again in 1975.

Q Would it have been the same in '73 and '74?

A No, we reduced it in the '74 forecast below what we had predicted in the '73 forecast.

Q All right, and then when you got to the preparation of the 1975 forecast, you dropped it once again?

A That's correct.

Q And when you got to the preparation of the December 23rd, 1975, forecast, which is the current revised Exhibit No. 19, you dropped it once again?

A I believe the confusion is that the forecast is made in the fall of the year by our company and submitted. It then goes into the area forecast in the winter of the following year, so I think we've run an extra year in there. When I'm talking about the forecast we made in '73, it's the one that you show in the area forecast of '74. I believe we've covered all the years, and we have, yes, reduced it for two years' running.

Q And in 1976 in the fall of the year you would expect to prepare another forecast, would you not?

A That is correct.

Q And that forecast, in turn, would be based upon your then current experience and would result in either a decrease or an increase or in leaving it the same?

A That is correct.

HEARINGS EXAMINER: Is this a good place for lunch for you, Mr. Shenker?

MR. SHENKER: Sure.

HEARINGS EXAMINER: Very well, let's recess till 1:30.

(RECESS AT 12:00 NOON)

* * * * * * * * * * * * * *

Following the luncheon recess, the hearing reconvened at 1:35 P.M. on January 22, 1976.

HEARINGS EXAMINER: Is everyone ready to kick off?

MR. SHENKER: The carpetbaggers here on Mr. Bellingham's left and the carpetbaggers on Mr. Bellingham's right both appear to be ready.

HEARINGS EXAMINER: Mr. Bellingham, do you want equal time? All right, let's continue with Mr. Shenker's cross-examination.

CONTINUATION OF EXAMINATION OF GLEN E. BREDEMEIER

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker (continuing):

Q Glen, before we pick up with where we left off, did you want to fill in some of the gaps of the stuff that you might have looked at over the noon hour?

A I've looked at some things, but I'm frankly a little confused as to exactly which tabulation we're talking about. If you can identify it -- I don't think it's significant, but if you want to identify some specific numbers we'll have to get the exact ones so that I can take a look at them.

Q You should have before you the old Exhibit 19.

A Yes, I have.

Q As well as the current revised edition of that Exhibit 19, which is dated December 23, 1975.

A I have that.

Q Okay. We'll just go on, then, from where we left off, and with those two basic documents the ones of concern to me in discussion with you at this point. The first year in which the Colstrip project, which is the subject of this hearing, could produce any power that would be available to you or any other of the applicants is 1980-81. Now, when Exhibit 19 was first prepared, did you then include as a resource Colstrip 3 and 4 in that year? It's not broken down on Exhibit 19 so we can't tell from the sheet itself.

A It appears that we did.

Q Of course, now you include only Colstrip 3 in 1980, and then you include 3 & 4 in 1981 and thereafter?

A That's correct.

Q So the first year in which we could have a true comparison of the old Exhibit 19 with the current revised edition of Exhibit 19 would be the year 1981-1982, on both documents, because that's the first year in which you have both Colstrip 3 & 4 present in both places?

A That's correct.

Q Let's look at that year, then, 1981-1982. The first thing we note under "Peak," consistent with the discussion we have had this morning on the reduction of your load, of course, is that in 1981-82 you now have forecasted some 169 megawatts less of peak load?

A Correct. Well, I haven't made the subtraction, but I'll accept your arithmetic.

Q Okay. And under "Energy" you also have reduced the amount of your load by some 143 megawatts in the 1981-82 time frame between the two sets of exhibits?

A Again, I'll accept your arithmetic.

Q Now, in the original edition of Exhibit 19 that was tendered for these proceedings, you showed a deficiency for the year 1981-82, but you also had a footnote then on Exhibit 19 that showed additional energy available from base loading combustion turbines.

A That is correct.

Q The current Exhibit 19 has again a footnote of additional energy available from combustion turbines, on energy, and it appears to be substantially larger than you had previously indicated on the old Exhibit 19. What's the reason for that?

A On the old Exhibit 19 we had included in line 5 293 average megawatts of combustion turbine operation, with an additional amount down below. If my handwritten arithmetic which I just did is correct, that totals 625 average megawatts, and if you make the same addition for our existing chart, they total 624.

Q Fine, so all you've done is to shift from the old Exhibit 19 line 5, where you had included combustion turbine as a resource available to meet your energy load, into a footnote on the new Exhibit 19 for the additional energy that was available to you?

A That's the practical effect.

Q I understand. Now, I think we should probably get out of the way, as you make clear in your written statement, that as far as Portland General Electric Company is concerned, you have no deficiency on peak over the years that are involved on your exhibit?

A For the resources shown vs. that load forecast, it appears that we are in good shape on peak.

Q All right. Let's continue to talk about energy, then, in the year 1981-82. Aside from the shift that you made from combustion turbines from available resource to footnoted available resource, is there any other change in your resources between 1981-82 on the two exhibits?

A Colstrip is slightly less, and our PUD hydro is slightly less.

Q Not a significant amount?

A 10 in the hydro and 30 on Colstrip.

Q Okay. By the way, why do you have Colstrip as 30 megawatts less in 1981-82, for example, than you have it in 1983-84?

A The initial year of operation on a large new thermal plant is taking 60% plant factor, subsequently 75%, so that's a phasing in process.

Q That, I take it, is based upon your experience with the Centralia Plant?

A It's based on experience nationwide and in the Northwest, and it's adopted by all of the utilities in the Northwest as an agreed upon procedure.

Q PGE is one of the participants in the Centralia Plant, the coal-fired generating station there?

A That is correct.

Q We find if we look at the load under "Energy" for each of the years following 1981-82 that the decrease from the original Exhibit 19 to the new Exhibit 19 is not arithmetically the same in each year, and I assume that comes from the way you apply your projections over the years, is that correct?

A They are independent forecasts, and there's no attempt to make any fixed difference between them.

Q Recently you at PGE and also your friends at PP&L, who I notice have joined us at the moment, have gone to an econometric analysis, have you not, for assisting you in your load forecasting?

A The Pacific Northwest Utilities Conference Committee, of which we are both members, has been doing some research work, having it done by a consultant, with varying results which are under analysis, and we have not applied them. They're not yet applicable to our own individual system load forecasts.

Q Who is the consultant?

A Dr. Kent Anderson, of NERA -- National Economic Research Associates, I believe, is the consultant.

Q Have you looked at the work that he has generated as applicable to PGE?

A As I understand it -- I have not been involved in the committee meetings and seen it in detail, but as I understand it, the work to date has been programmed to work on a regional basis and they have not yet developed the program which would be applicable to an individual utility.

Q The process, as I understand it, is one in which you collect information on population, industrial growth, land use planning, things of that sort, apply quantitative terms in order to fit them into a computer base model.

A I believe that's a good general description.

Q As of October, 1974, Mr. Bredemeier, did you then count on having the Beaver combined cycle additional capability of some 150 megawatts available for you by 1977?

A Yes.

Q Similarly, did you then think that your Boardman Plant would be available to you by July of 1980?

A Yes.

Q What is your present projection for the availability of Boardman Plant?

A We're still hoping to make 1980.

Q And the Pebble Springs #1 unit, when first planned, was to go into operation at what time?

A I think the earliest official estimates were about 1980.

Q You now are projecting 1983 for Pebble Springs?

A That is correct.

Q And Pebble Springs #2 was projected to go into service at what time initially?

A Oh, we thought in terms of a two to three year lag from the first unit, and we're still using three years.

Q Who is ABC at Portland General Electric?

A Well, that also is an engineer who was formerly in my department.

Q I see. I put before you a document which you have produced for us, labeled "ABC, October 22, 1974, Portland General Electric Company New Generating Capacity Scheduled for Service, January 1975 through December 1995." There are five units which are referred to there, one is the Beaver combined cycle, and the Boardman coal-fired generating station, the two Pebble Springs plants, and the Trojan plant.

A That is correct.

Q Why isn't Colstrip on that list?

A You will notice that this is a list of plants in which Portland General Electric Company would be the constructor and operator, and by the same token, the WPPS #3 plant is not on there.

Q For the benefit of the reporter, the WPPS #3, that's the Satsap Plant, to be built by Washington Public Power Supply System.

A Yes.

Q And that would be "WPPS"?

A Correct.

Q On this listing you were only talking about those units for which you would be the constructor and sponsor?

A That is correct.

Q Attached to the same listing you have provided for us the new generating capacity actually installed in the year 1974, which would only have been at Beaver, the six units there, and the list of imports and exports projected 1975 through 1986. Can you tell me what imports and exports mean to you?

A In this context, they refer to exchanges of power between our system and other electrical systems outside of the Pacific Northwest power area.

Q What does PG&E No. 2 mean?

A That refers to Pacific Gas & Electric Company, and as I have indicated, that's a contract number two, which superceded an earlier number one contract.

Q And SCE No. 2?

A Southern California Edison.

Q As I read those two sheets of your projected imports and exports, you show an import after first three columns in 1975 and 1977 of 100 megawatts from the Southern California Edison Company in the winter months, November and December, would that be correct?

A That's correct.

Q And under exports, you show for the summer months, if you ever get those in Portland, May, June, July and August, and also for the months of September and October, exports for the years 1975 through 1986 at 500 megawatts for each of those months?

A That is correct.

MR. SHENKER: Is our next exhibit number 16, Mr. Davis?

HEARINGS EXAMINER: Yes, sir, number 16.

MR. SHENKER: I am offering this exhibit as "DNR 16."

MR. BELLINGHAM: No objection.

HEARINGS EXAMINER: Very well, DNR No. 16 will be admitted. What do I describe that as, generally?

MR. SHENKER: PGE New Generation Capacity Imports and Exports.

Q And I have marked as "DNR Exhibit No. 17," Mr. Bredemeier, the 3-page tabulation that you and I discussed previously, the March 1, 1974 PGE System Loads and Resources. That came from your files, did it not?

A Yes, it did.

MR. SHENKER: I will offer DNR Exhibit No. 17.

MR. BELLINGHAM: No objection.

HEARINGS EXAMINER: DNR No. 17 is admitted.

Q The last question that I wanted to put to you, Mr. Bredemeier, with respect to the comparison of the two exhibits series 19, as I understand your current projections for the years 1983 through 1985 on energy, you now have no deficiency, but a surplus?

A I am sorry, which one are we referring to now?

Q Your current revised edition, Exhibit No. 19, for the years 1983 through 1985, for two years you have a surplus, not a deficiency, in energy?

A That is correct, sir.

Q The amount of the surplus that you now project is less than the surplus that you had projected for the year 1983-84, but more than the surplus you had projected for the year 1984-85. Can you tell me why that is true, sir?

A Comparing the two different exhibits 19's?

Q Yes.

A Well, of course, to begin with there was a load reduction. That was one of the factors. I'm not sure if I'm going to identify the exact number you're looking at, but between the two different editions there was a load reduction, and also there was an impact due to concluding the second unit at Satsap.

Q That's what you call WPPS No. 3?

A It would be WPPS No. 5 in this case.

Q WPPS No. 5 -- that would be in the year 1984?

A It appears in 1984, yes.

Q Has there been a rollback on that particular unit's timing?

A I'm not aware of any official announcement. I would have to look at some of the recent projections on probable energy dates. There may or may not have been.

Q Well, you rolled it back as between the two Exhibits 19 that you prepared, did you not? You had that previously included in the earlier years, did you not?

A I previously didn't have it in at all.

Q I thought you had WPPS Nos. 3 and 5 combined in your "Large Thermal," line number 6, on the original Exhibit 19.

A No. In the original, had it been there it would have been in that line, but on that exhibit we only had in number 3.

Q I see. Well, when did you decide to participate in WPPS No. 5?

A We've had under the initial contract the first option, you might say, to participate in the second unit, and within the last few months we have indicated a strong desire to participate, and for that reason it's included in our tabulation. The arrangements have not been finalized.

Q Do you have the contract right to participate in it if you wish?

A I believe we do under our agreement for the first unit.

Q Did you have that right a year ago?

A Yes.

Q But a year ago you did not include it, and now you do because you think you're going to exercise that right?

A A combination of circumstances -- it appeared to be more firm in its proceeding, and we thought we would exercise the right, and so that's the reason we have inserted it.

Q I'm going to read a number of generating plants' names to you, Mr. Bredemeier. Would you stop me when I stop talking about hydro plants?

A All right.

Q For PGE? Round Butte, Pelton, Oak Grove, North Fork, Farraday, River Mill, Bull Run, Sullivan, and Summit.

A Summit.

Q What kind of a generating station is Summit?

A It's a diesel generating station.

Q And you also have a very old facility called Station L, do you not?

A We did have. We retired it December 31st, 1975.

Q That's about 60 years old?

A The original construction probably was that far back.

Q You pulled it out of mothballs, as I recall, a couple of years back, and fired it up again and began operating it for awhile, did you not?

A Yes, we did.

Q What kind of facility is that?

A Originally, it was principally filed with hog fuel, sawdust, that is, with a capability of converting to oil at times, and subsequently natural gas became available for partial use, and when we operated in 1973 we operated it on natural gas.

Q Can you tell me, Mr. Bredemeier, in the last few years what the highest load factor is at which you would have operated any of the hydro facilities that I named off for you?

A Well, that would depend on whether you were speaking of daily, weekly, monthly, annual -- we would --

Q Annual.

A We would operate the hydro plants to utilize all of the water that could go through the project, that could physically go through the turbines, and it would of course vary with each individual plant, and also each year, depending on the available water supply.

Q How high would it vary to?

A Oh, on an annual basis, if I can use my slide rule a moment, I'll tell you what it could be under critical hydro.

Q Sure.

A Well, it appears that under critical hydro it would be in the neighborhood of 36%, and with median hydro it would maybe range up to 40%, and with better hydro than that it could go up to 50%, perhaps.

Q The Sullivan electric generating station in 1973 had an annual load factor of 87.6%, did it not?

A That sounds reasonable.

Q The Bull Run had as its highest load factor in the last five years 75%?

A That sounds reasonable.

Q The River Mill facility, 67%?

A I'll accept -- you're obviously reading from some generation statistics which are publicly available. I'll accept your arithmetic.

Q Farraday at 61% sounds reasonable, too?

A Yes.

Q North Fork at 58%?

A Yes.

Q Oak Grove at 66%?

A Yes.

Q Pelton at 49%?

A Yes.

Q And Round Butte at 42%?

A Yes.

Q I don't have 1975 statistics before me. Do you know whether in 1975 any of those load factors were exceeded at any of those hydro stations?

A That's possible. I don't have the figures with me, either.

Q Portland General Electric Company has had something called the "Grit Study," has it not?

A Yes, it has.

Q Can you tell us what that is, please?

A The initials stand for "Generating Resources Investigation Team," and it's composed of a group normally of four individuals, engineers, etc., that report to management on possible siting locations, or developments relating to new facilities that might be available.

Q Are you a member of that team?

A I am not.

Q Is any member of that team someone in your department who reports to you?

A Yes. I have usually had a member of the team in my department.

Q Is the investigation still ongoing, or has it concluded?

A No, it's an ongoing arrangement, by means of which they try to keep abreast of developments in the industry. For example, they do most of the monitoring of solar activities for us.

Q How long has that Grit Study been under way?

A It's perhaps not a Grit Study, but it's a team itself, which has been on for -- I would estimate four years.

Q In any event, sometime before you agreed with the other participants in the Colstrip project to become a participant in the Colstrip project, you had already begun your Grit Study, had you not?

A I believe that's correct.

Q And in due course, Colstrip as an alternative became one of the matters for investigation by that team?

A Among other things.

Q Yes. So that before you actually entered into the August 1972 letter of intent with the other participants in the Colstrip project, you had available to you, did you not, the results of an investigation by the team which compared Colstrip with other alternatives, such as a combined cycle, the Boardman Plant, coal-fired or nuclear?

A I'm sure that whatever studies were produced by the team were presented to management.

Q Yes. Don't you recall, Mr. Bredemeier, that there was in fact an investigation made that compared the alternatives of looking at Colstrip with some of the others?

A I now have learned since then that there was. At that particular time I was not a member of management, and therefore was not involved in all of their reportings to management.

Q Mr. Bredemeier, do you recall when Portland General Electric Company filed its application for the Pebble Springs nuclear plant?

A I would guess during 1972.

Q With whom was that application filed?

A It would have been a declaration of intent, and it would have been filed with the Oregon siting agency, which at that time was the Oregon Nuclear Thermal Energy Council.

Q Among the documents submitted, of course, you would have had to submit an environmental report, isn't that right?

A That is correct.

Q And you did submit such a report in more than one volume, did you not?

A I'm sure we did.

Q As part of that report, Mr. Bredemeier, do you recall that there was included a portion of the Grit Study which compared the alternatives of coal-fired Boardman, nuclear Boardman, simple cycle gas turbine, combined cycle, and the Colstrip, Montana, mine-mouth coal-fired facility?

A I'm not surprised, and I'll accept your say-so.

Q I am handing you what has been marked for identification as "DNR Exhibit No. 18," the cover is simply the cover page of Volume No. 2 of your environmental report of the construction permit stage of your Pebble Springs Plant. The relevant document that I wanted to call your attention to is on the second page of DNR Exhibit No. 18. It is a graph which compares the various alternatives that I have just mentioned to you. Do you recall that now?

A Yes, I do.

Q And this was prepared as part of the Grit Study, was it not?

A I believe it was at least derived from Grit Study.

Q The third page of the exhibit is a table which tries to put into quantitative terms some economic comparisons of energy source alternatives, including those that were on the graph, plus geothermal, dry steam and geothermal brines. Right?

A That is correct.

MR. SHENKER: I will offer DNR&C Exhibit No. 18.

MR. BELLINGHAM: No objection.

HEARINGS EXAMINER: DNR No. 18 is admitted.

Q Now, in addition to the geothermal study which is part of the Grit investigation, you have also mentioned that there is a solar study that has been made as part of the Grit investigation. Are there any other alternative sources of energy that have been considered by the Grit team?

A I meant to imply that they were monitoring developments and coordinating our financial participation in some investigations. I don't beleive that they themselves are making a direct study, and by the same token they would be observing the wind, or tide, or whatever else appeared to have any feasibility.

Q Coal gasification, or liquefication, or anything else?

A That's correct.

Q Okay. Now, I infer from looking at the chart, which is page 2 of the Exhibit No. 18, that the combined cycle alternative which assumes that it's in the Willamette Valley, south of the City of Portland, Oregon, or someplace around Portland down in the Willamette Valley, is a favorable alternative in the range of 3250 to 4500 hours of operation in the course of a year. Do you read that in the same manner?

A I believe you could conclude that from here, yes.

Q And in part based upon that kind of conclusion, Mr. Bredemeier, you did undertake to proceed further with the combined cycle alternative, as we have seen from your resource projections and the exhibits you have presented. Isn't that true?

A No doubt this was one of the considerations.

Q All right. The lowest cost combination presented in that chart for thermal energy consisted of the simple cycle gas turbine located within the PGE service area, and the second lowest cost was a nuclear unit near the Boardman site, isn't that correct?

A I believe you're referring to the left side of the chart where the hours of operation are not great, and as I read it, the cheapest was a single cycle, followed by the combined cycle, and then the third was the nuclear plant.

Q Nuclear plant at Boardman?

A That is correct.

Q What was the most expensive of the alternatives that they were studying?

A Their judgment at this time apparently indicated that Colstrip was more expensive than the alternates for that number of hours of operation.

Q Colstrip meaning the project that we're talking about here in this proceeding?

A That is correct.

Q A mine-mouth generating station, right?

A That's correct.

Q In part, based upon this study, Mr. Bredemeier, it is true, is it not, that PGE decided that it would be economically beneficial for it to continue with the Boardman site as a coal-fired generating station?

A Actually, at this time we were looking at primarily the nuclear plant, to begin with, and coal was an alternate. We proceeded with the coal-fired plant for various reasons, and undoubtedly this is one of the predecessor documents that had some influence on that decision.

Q In order to pursue the coal-fired plant, you had a substantial study prepared for you, did you not, by the Charles T. Main Company, on the coal delivery systems for the Boardman fossil plant?

A I understand that we did have a coal transportation study made by Charles T. Main, right.

Q That was in May of 1974, as I recall?

A That may be.

Q And the purpose of that report was to document for you the best manner to transmit the coal to your generating station in Boardman from the coal source?

A I do not have a copy of it with me, so I can't tell you the conclusions. I'm not sure that I read it, and I think that the date was 1972, rather than 1974.

Q I think it was 1972 that it was commenced, but the final report was delivered in May of 1974.

A That could very well be. I think the work was authorized earlier.

Q There were a number of alternatives, were there not, studied by Charles T. Main Company, on how best to get the coal to your organization?

A Inasmuch as I can't recall the report, I couldn't really answer that.

Q Showing you a copy of the Charles T. Main Company final report of May, 1974, on the first page of the report, under the scope of the report, it indicates the study was to look at delivery of coal to the Boardman Plant site from four different sources, Montana, Wyoming, Oregon and Alaska, right?

A It so states.

Q And you have made a decision now, have you not, on what your source will be?

A Yes, we have.

Q That's going to be Wyoming, right?

A That's our initial contemplated source, yes.

Q Did you participate in any of the discussions with folks in Montana who might have coal to see if that might be a good source?

A I did not.

Q Did somebody from your company do that?

A They may have. I couldn't say.

Q Who is L. C. Curtwright?

A He's the Director of the Fuel Supply Department of Portland General Electric Company.

Q And N. H. Woodley? Who's he?

A Neil H. Woodley is the current chairman of the Grit team.

Q Showing you first, Mr. Bredemeier, a memorandum dated April 25, 1974, from Mr. Woodley to Mr. Curtwright, a copy of which went to you, do you recognize the attachment to that memorandum as a comparison of estimated delivered coal costs to the Boardman fossil plant?

A Yes, I do.

Q And that came from your files, did it not?

A Either mine or Mr. Woodley's.

Q All right. Next showing you a document that has stamped on it, "Grit file," No. 140.11.3, dated November 1, 1974, that also comes from the PGE files and shows a breakeven delivered coal cost in 1974 dollars, does it not?

A Yes, it does.

Q As far as you know, those are true and accurate?

A I have no reason to think otherwise.

Q Okay.

A I believe it is an estimate.

Q Sure. Well, not having operated the plant yet, you wouldn't know for sure.

MR. SHENKER: Having marked the two documents respectively as "DNR Exhibits 19 and 20," I will offer them at this time.

HEARINGS EXAMINER: Hearing no objections, I can't assume there will be none, so I'll wait. Was that 19 and 20?

MR. SHENKER: Yes, sir.

MR. BELLINGHAM: Do you have copies of this for us?

MR. SHENKER: No, I have none of those copied yet, Bill.

MR. BELLINGHAM: No objection.

HEARINGS EXAMINER: Do you have any objections, Mr. Graybill?

MR. GRAYBILL: No.

HEARINGS EXAMINER: Very well, the exhibits are admitted.

Q Mr. Bredemeier, can you tell me in round terms, how much energy did you send to California last year?

A The energy which went through our system, not necessarily PGE originated, but the amount that we scheduled to California was 505,754 megawatt-hours.

Q In order for us to determine what that is in terms of megawattage, would we divide by 8,760?

A If you wish to get the annual average, that would be correct.

Q Okay. Was that high in 1975 or is that pretty much in keeping with what you had been doing for the last several years?

A It's less than we've been doing.

Q By any significant amount?

A It's a little less than the immediately preceding year, and substantially less than the years prior to that.

Q When PGE first was involved in the discussions for the development of the Colstrip Units 3 & 4, PP&L as yet had not become one of the participants and PGE had determined to take 15% of the Colstrip project. As you know now, your proposed share is 20% of the Colstrip project. Why the increase?

A I don't really know. I assume it was a management decision based at that time on a combination of our own desires and the desires of the other participants.

Q But you don't know the reasons for that?

A No, I don't. I think it was just a rebalancing of the available percentages.

Q Is it still the intention of PGE to obtain permission to build two more thermal projects at the Boardman site?

A Well, we have in effect permission to build two more now, and the site as ultimately developed should be capable of more units than that.

Q Well, how many more plants do you want to build at Boardman?

A Well, it depends on how far out in the future we go. That's a site that we hope to utilize to take care of future load growth.

Q What's the size of the two plants for which you now have permission to proceed further at Boardman?

A 500, 1300 megawatts, plus or minus 50, as I recall. It's a range -- 500 to 1300, plus or minus 50.

Q And you yet haven't decided whether you're going to build 500 or 1300 megawatt plants there?

A No, that would be off in the future, and it would depend whether it was to be coal-fired or nuclear. It would be an economic decision.

Q If they were nuclear plants, then you would propose a capacity of around 1250, perhaps, and if coal-fired, maybe as little as 500?

A That's very probable.

Q Do you have any further knowledge now, sir, whether the Boardman plant will generate power to be sold to Alumax, which may or may not exist in the Hermiston area, but if it does, it will produce aluminum in a rather nearby location to you?

A No, the Boardman plant portion that is coming to our load, 65%, is to be used entirely for carrying the load of Portland General Electric Company.

Q You don't intend to sell anything to Alumax?

A No.

Q Have you had any word within PGE of discussions with potential financing sources for power plants outside of the lending institutions that provide financing?

A I'm not sure what you have reference to, some blue sky type of promoter, you mean? Foreign money or something of that nature?

Q I didn't have in mind any blue sky type of promoter. I hope you don't either.

A We don't finance individual plants. We borrow money for our total system. In other words, all sorts of construction.

Q In terms of financing sources, however, have you heard of discussions within PGE by which major industrial consumers of energy would be lenders for the financing necessary?

A Oh, I see. Well, I think that's been discussed throughout the Northwest area as a possibility, and certainly, we're aware of those discussions. Whether there have been any bilateral discussions, I'm not aware of any.

Q Who are the industrial consumers that have been discussed as potential lenders to build the power plants?

A I don't know of any specific ones. I assume that they are the existing industrial customers in the Northwest.

Q Such as the aluminum companies, for example?

A Yes, Kaiser, Reynolds, Alcoa.

Q Martin Marietta, Alumax --

A I would assume so, yes.

Q Intalco -- in fact, we find that there are more aluminum companies located in the Pacific Northwest than anyplace else in the world, isn't that true?

A That's what I understand, that there's quite a large load in this area.

Q Yes. They take 1/3 of all the Bonneville power that it has, isn't that right?

A That doesn't sound unreasonable.

Q It doesn't sound unreasonable as a mathematical estimate, but valued judgments may differ as to whether it's unreasonable or not.

A I was referring to the mathematical part of it.

Q Is it still your understanding, Mr. Bredemeier, that PGE's contemplated capital investment for Units 3 & 4 is $127 million?

A I believe that recent estimates have increased that.

Q How much?

A If you will bear with me while I shuffle through my papers -- The latest prospectus indicates we expect our share to be about 78,000 for each unit, exclusive of transmission -- or $78 million, excuse me.

Q That would be $156 million for the two units, exclusive of transmission?

A Correct.

Q How much do you have in mind for transmission?

A I'm not sure of the figure on transmission. That's not indicated in this prospectus.

Q Do you still adhere to the view, sir, that the closer the generating facilities are to the load center, the more reliable your system is?

A Yes. In an interconnected system it's offset a little bit, but basically as a factual statement I would agree with that.

Q The President of the Portland General Electric Company for sometime has been Mr. Frank Warren, is that true?

A That is correct.

Q And I take it you still agree with his view announced immediately prior to the filing of the application in this proceeding that the absolute need of this project was not yet clear, but it would be prudent to have the alternative available?

A I believe that that's a statement he made, and it seems to be a reasonable statement, inasmuch as our planning of power supply is always in a state of flux.

Q That was a statement he made in a presentation to the Board of Portland General Electric Company, and when your deposition was taken in March of last year you agreed with it. I take it you still do?

A Yes.

Q I just want to ask you a few more questions, Mr. Bredemeier, and then I'm going to have to interrupt, because my Montana colleagues want to be able to ask you some questions before they have to meet other commitments here locally. I wanted to ask you a little bit about your understanding of the environmental impact of coal-fired generating stations. As I understand it, your position is that the view that stack gas scrubber systems have had their problems solved is not one that you share.

A I believe I expressed concern earlier this year in that regard.

Q And you still have that view?

A I'm really not an authority on it. I just can only reflect what I read in the press and reports. I assume that there are still problems.

Q Well, there's an Environmental Department, indeed, of Portland General Electric Company. I would assume your judgment would be affected by their professional views, too?

A Perhaps, although we don't have any scrubbers in our system, so we have no firsthand knowledge.

Q You will have to pay some attention to environmental considerations as you go further into the possibilities of coal-fired generating stations, though, won't you?

A We always pay attention to considerations and meet all the obligations. We do not anticipate requiring a scrubber on our own coal-fired plant.

Q And in your view, the installation of gas stack scrubbers does not make good economic sense, does it?

A As far as the cost of power produced is concerned, it increases that cost of power. That's right.

Q And as far as you're concerned, the opinion as to the state of the art of scrubbers in the electric utility industry is that they have significant operating problems and have yet to demonstrate their reliability?

A I think I agreed to some such statement.

Q You have not been convinced that the reliability of scrubbers has been demonstrated in any large scale commercial applications, have you?

A I don't believe there have been very many. Some reports I get indicate that things are looking better than they did a year ago when that statement was made.

Q It's the aspect of both the economic cost and the reliability that I take it still trouble you?

A That's true. The poor reliability, if it does exist, tends to increase the cost.

MR. SHENKER: Mr. Davis, I understood that Mr. Graybill and Mr. Meloy want to be able to interrupt my cross-examination at this point, and I have no objection to doing so.

HEARINGS EXAMINER: Very well. Who wants to go next? Mr. Graybill.

Cross, by Northern Plains Resource Council

By Mr. Graybill:

Q Mr. Bredemeier, I have a few questions I would like to ask you. I notice in the exhibits that you prepared with your statement you didn't include a historic demand curve. Is there a reason for that?

A No, it's nothing secret. In preparation of that at the time, it wasn't suggested that I include one, and so I did not.

Q As a matter of fact, the annual report -- I trust you have one of your own 1974 annual reports?

A I have.

Q The annual report shows that at least in the two last years before the report energy sales for your company were down. In other words, you had a fall in demand, didn't you?

A Not on PGE system load, we did not. It increased.

Q Well, in your energy sales, if you'll look at page 4, there's a little chart there. Do you see that chart? Is that wrong?

A I'm looking at the back, as you are. What are you looking at?

Q I'm looking at page 4. Your total energy sales fell from 1972 to '73, and from '73 to '74, according to this annual report, isn't that true?

A Well, that statement is followed by one which relates to our own system load, which I just quoted.

Q I'm not looking at a statement. I'm looking at this little box on that page. Do you have the 1974 annual report?

A Yes, I have, and I'm looking at the wording that describes the box, and the box includes sales to other utilities, as indicated in the notation on the box. It includes sales for resale, and it's true that the total load, if you include sales for resale, declined, because as I indicated to Mr. Shenker, our sales to California had declined.

Q So what you're telling me is that the yellow portion on the top of those boxes there is a category called "Miscellaneous, including sales for resale." Are you saying that the rest of the boxes didn't decline in those years?

A Well, they weren't supposed to. If the graph was carefully made from the chart or from the statistics, why, they would not have declined.

Q The average annual use of your residential customers declined in those two years, didn't they?

A Yes, they have.

Q And the total megawatts declined, again, perhaps, including the sales to other utilities, and the net system hourly peak declined, didn't they, all as shown on the 10-year summary at the back of your annual statement?

A Are we now looking at the back?

Q Yes.

A Our winter peak declined because we haven't had any cold winter weather since January of 1973, at which time we set an all time system peak load record.

Q Well, you might have had some bad weather that year, then, is that what you're saying?

A We had that year, that's correct.

Q Now, what you say about the little box on page 4 interests me. What you're saying is that most of that yellow is sales to other electrical utilities, hmm?

A The accountants assembled that category, and I don't have the exact constituency. What I am saying is that it does include sales for resale, and if statistically I make that subtraction out of the summary at the back of the book, we find that PGE's own system load has increased every year.

Q What line are you looking at in the back of the book?

A I had to make that subtraction, because the line near the bottom, about the 6th line from the bottom you'll see 1974 indicates 11,402,064 -- I'm sorry, just below that -- that's right, that's the correct number, 11,402,064 was the total amount sold, and then the bottom line indicates the amount that was sold to other utilities. If you make that subtraction, we then arrive at the net energy which satisfied Portland General Electric Company's own load.

Q What amount was sold to other utilities?

A 599,723.

Q So the chart that you used here as Exhibit 19-A, do those charts, 19-A and 19-B and 19-C and -D, did those include sales to other utilities in your load?

A We have no obligation to make any sales of energy to other utilities.

Q Well, I was going to ask you that question. You have no obligation to sell to other utilities, right?

A We have an obligation to sell capacity in the summertime months, which is our off season, to California, but there's no right to buy energy to the companies.

Q Your corporate charter doesn't require that you sell to any except customers in your industrial, commercial or residential fields, isn't that right?

A That sounds right.

Q So my question, then, is, do your charts here, Exhibits 19-A through -D, under the blue columns called "Load," do those include sales to other utilities?

A They do not.

Q And if the charts, similar type charts that have been presented by other witnesses here from other utilities did include sales to other utilities, they simply differ from yours in that respect?

A To that extent their charts would be different from ours, yes. We have none so I didn't put them on the charts.

Q And on Exhibit 19 itself, both under "Peak" and under "Energy," at the head of each yearly column you have what is called "Load." Does that include sales to other utilities?

A No, it does not.

Q It does not -- do you sell a lot of power to California?

A We have a contract to make available summertime capacity, and under that contract at times if we have surplus energy available on our own system, California may elect to buy that. The quantity of that is not great. The sales appear large because we have, at the request of California utilities, purchased power directly from other utilities in the Northwest, and flowed it through our system, so that we were in effect the billing and collecting agent under the agreement. That would be the extent of our sales.

Q But you recognize that you wouldn't have to build a plant somewhere to provide power for California utilities?

A Very definitely not.

Q If California buys power from you in the summertime, do you have an obligation if they want to to run your combustion turbines to provide it?

A If they elected to pay that price, we would -- we could be exposed to running the combustion turbines, that is correct.

Q So in other words, you charge them different prices, depending on the source of the power to you?

A That's correct.

Q The Boardman Plant, which I understand you're building -- have you got a permit for that yet?

A Yes, we have.

Q For the coal portion of it?

A Yes.

Q And is construction underway?

A We have placed a number of orders for equipment, and there has been some preliminary site work done, but we have not yet mobilized on the site.

Q And do I understand that's to be a 500 megawatt plant?

A Pretty close to 500.

Q You said that -- I understand there are some nuclear sites or units to be involved at the same site, or near the same site. Can you add additional coal-fired sites at Boardman?

A Yes.

Q Can you add them in terms of licensing?

A The permit which we have which provides for two additional plants contemplates that one or more of the additions might be a coal-fired plant.

Q If it was a coal-fired plant would you have to not build a nuclear plant?

A Well, the two additional ones that are currently authorized do not stipulate which it shall be, and presumably we would use up those two slots. We would have to make application then for some additional plant siting.

Q Do you anticipate that that would be possible?

A We certainly hope so.

Q So in other words, there isn't any reason that you know of now that you couldn't build additional coal-fired generation at Boardman if you wanted to?

A We expect to be able to if we need to.

Q And if that's the case, there really isn't any reason why you couldn't supply your own demand, and I mean energy demands, even in these years where you have projected the Colstrip plant, is there?

A In later years we have made assumptions that we would build plants as necessary, probably nuclear, but coal might be a fall back position.

Q So that if for some reason the Colstrip plants were not built, you could fall back and build either nuclear or coal-fired plants at Boardman?

A Not for the early years in which the Colstrip plant would be available, but possibly in later years.

Q What do you classify as "early" and "later" years?

A 1980-81-82-83, along in there.

Q Those are what, earlier or later?

A Those are earlier years. Anything up to, say, 1982 or 1983.

Q '80 to '82 or '83 are earlier years, and then you could put something in -- if you found out this year, for example, that Colstrip wasn't going to be built, you could build another unit at Boardman to supply your needs in '83-84-85-86, is that what you're telling me?

A We could probably build another plant to be completed in that span of time, yes.

Q So that from your point of view -- maybe I don't understand these charts, but as I read Exhibit 19-B, the Colstrip plant is frosting on the cake. In other words, you have sufficient resources without it for peak, isn't that right?

A We are not participating in the Colstrip plant to obtain peak. Peak accompanies the base load energy that we're attempting to get.

Q So the problem that you hope to solve by the Colstrip plant is the problem illustrated on your Exhibit 19-D, and you've said that you could replace the last four of those bar graphs, if you knew about it in time, with another coal-fired plant at Boardman, is that true?

A That would appear to be possible.

Q For the years '80 to '82, do you have any other alternatives in mind in the event that Colstrip or some of your other assets -- well, let's say in the event Colstrip is not built?

A Not at present.

Q Have you sought or thought about other assets, other possible plants to replace that?

A We have considered the possibility that it would not be completed, but we have not been actively searching for any source.

Q Let me understand Exhibit 19-D. What is the purple and the red bar?

A Did you say 19-D, Mr. Graybill?

Q D, yes.

A The purplish colored bars are the resources that we've entitled firm resources, which we expect to have available to meet our load requirements.

Q Then what is the blue bar?

A Those are resources that are currently planned, other than Colstrip. The dark blue bar.

Q Well, I'm talking about the light blue bar.

A That's our load. The light blue bar on the right side is our load.

Q All right, now, would you look at your key, and I think you'll find that your chart has an error in it. The light blue bar is titled "Total Resources," and that's got me confused.

A I'm going to fire our draftsmen. They made a mistake on that one chart. All the rest are labeled "Load."

Q Oh, all right, now I'm with you again. You really shook me for a minute here.

A I'm very sorry. You happened to pick the one that's mislabeled.

Q So the blue bar is total load, and then the purple and the red are your resources to meet the load, right?

A That is correct.

Q What do you plan to do in 1976 and '77 when you don't meet the load, have a brown-out?

A I think perhaps reference to Exhibit 19 which we've discussed earlier indicates that if worse comes to worse we may be able to mobilize our combustion turbines to cover that deficiency.

Q Oh, in other words, your combustion turbines don't show as part of your firm resources?

A The bar charts are made from the upper portion of the tabulation on Exhibit 19, and only include that nominal amount for peaking from our combustion turbines.

Q So in other words, to the extent that the word "resources" on Exhibit 19 might imply to a casual uninitiated user, like myself, it's misleading, then. It really isn't your total resources, is it? It's just some of your resources.

A It includes a portion of the combustion turbines.

Q Yes, I notice that little red, so I presumed that was all there was available.

A No, it's made from the chart. It's consistent with the chart and consistent with all of the area planning studies. The remainder, which is the bottom line on Exhibit 19, is a fall back position, which we would hope we'd be able to implement if worse came to worse, but we have no assurance that we'd ever be able to.

Q Well, I see this line number 1 at the bottom of page 19 -- Exhibit 19 -- and that says, "Additional energy possible from combustion turbines." Is that true?

A I used the word "possible," yes, because there are many ands, ifs, and buts as to whether or not this can be realized.

Q If you added that line onto your bar graphs, there would never be a circumstance in the years shown, would there, when you didn't have enough energy?

A There would be enough energy in all years except 1979-80.

Q So even if you added the total of 551, that's the only year you would be deficient?

A That's correct.

Q I see. So in a sense the chart doesn't show your total resources, it only shows the resources that you'd like to think you might have to use?

A Well, that would be one way of phrasing it, yes.

Q Is that true of Exhibit 19-C, too?

A Yes. All of the exhibits are formulated on the same basis.

Q So all of these exhibits fail to show all of your real capacity, or real -- I guess capacity is a good word there.

A No, they show the full peaking capacity on Exhibits 19-A, and

19-B. It's only the energy exhibits --

Q They don't show all the energy available.

A Potentially available.

Q So the record should show that all of these exhibits really don't show the total energy available. They only show the part that you would hope that you'd have to use.

A Potentially available.

Q The fact of the matter is, when you understand that, you haven't any peaking problem or any energy problem, if in fact you can use equipment which you already have in place, namely, your combustion turbines. Isn't that true?

A If you could --

Q With the possible exception of that one year, 1979, when you're a few megawatts short, isn't that right?

A If you were able to produce these full amounts, that's correct.

Q Well, of course, now, Mr. Bredemeier, you wrote the chart, and I presume you didn't put anything on the chart that isn't true.

A No, I did not. I put the word "possible," because there are many constraints, federal policies, what-not, that --

Q Excuse me, I want to talk about the restraints in a minute. The fact of the matter is that Colstrip is really not necessary, then, for your company, with the possible exception of that one year, except to make it run a little easier, isn't that right, and a little less expensively?

A Well, that's one way to put it.

Q And in addition to that, if you really wanted to, you could get busy and build another unit at Boardman, another coal-fired unit, forgetting about nuclear, and get it on line for the last four years that you need Colstrip. Isn't that true?

A Hopefully, if necessary we could complete one by, as I said, 1983, along on there.

Q And in addition to that, according to Exhibit No. 18 for the Department of Natural Resources, which you just identified as a comparison of costs that your company used in one of its other hearings, if you did that and shifted from Colstrip to Boardman, you'd actually save money, wouldn't you?

A Not necessarily.

Q Well, it does show, doesn't it, that coal-fired Boardman plant has a less total energy cost than the coal-fired Colstrip plant? Doesn't it?

A That specific study made at that point in time showed that, but that's not necessarily the case now.

Q Do you have any better evidence than this that you could present to us now?

A I don't have any such evidence with me, no.

Q This is a study designed to illustrate the situation in 1978, if I read the diagrams correctly, so it's a study of what's going to happen in the future yet, isn't that right?

A It was a study made at some time in the past, and since that time there have been a number of changes which have affected both the cost of Colstrip and any other alternates.

Q Can you say that it's made Boardman more expensive than Colstrip?

A I didn't say that. I said that the relationship has changed and it may or may not be.

Q I asked you if you could say that.

A It may be, I don't know.

Q You don't know?

A I don't know.

Q So the best evidence we have at the moment is that Boardman, according to your own company exhibit, was cheaper than Colstrip?

A The evidence at that time -- if I were to express an opinion now I would feel that they were probably about a standoff.

Q On page 2 of your statement, when you say that your energy sales are 7% from others, these are the other utilities?

A Well, that's intended to be the same others that we were looking at a moment ago in the annual report.

Q Now, on page 4 -- no, I think you've explained that to me, so I won't bother you with that -- the coal that you're planning to burn at Boardman you're buying in Wyoming? Is that right?

A That's correct.

Q Did you consider buying Colstrip coal for that plant?

A As I answered Mr. Shenker, whether anyone in the company considered it or not, I don't know. I did not. I wasn't involved.

Q I see, you weren't involved. You wouldn't know whether there were any reasons why you didn't buy the Colstrip coal as against the Wyoming coal?

A I suspect that the Wyoming coal presented itself as the most economic purchase that could be made available.

Q Is there any reason that you know of that you couldn't buy more coal in either Wyoming or Montana, if you put in additional plants at Boardman?

A I imagine we could go shopping on the market and see what was available.

Q You're aware, are you not, that the Western Energy Company is selling coal and has coal for sale?

A Yes.

Q I understand that there are no scrubbers at Boardman. Is there a precipitator system?

A As I understand it, we'll have something to remove precipitants. We'll have something, either a precipitator or a baghouse, or something of that nature.

Q I see. Your company owns 65% of Boardman, is that right?

A At the moment we own 100% of it. We anticipate receiving about 65% of the output.

Q Could you receive 100% if you needed it?

A Not after we have solidified our commitments, which are under negotiation.

Q Well, could you have avoided negotiating that if you'd felt there was any shortage of power for Portland General likely?

A Well, you could have. The problem, of course, is that a plant that size coming on in one chunk is a rather large amount for a single utility to swallow. Therefore, it becomes more desirable to take a portion of that plant and then subsequently take a portion of another plant.

Q Is this because of the way they're operated, or because of the capitalization of them?

A Well, of course, you have the economies of scale when you build a larger plant, so all of the participants can realize lower cost power from that project. Of course, the financial burden is lessened if you only have to finance a smaller percentage at any one time.

Q Well, I appreciate that, but if you were going to build another plant anyway, you might as well have all of one instead of half of two, unless there are some other reasons. That's what I'm getting at. Are there other reasons that you'd rather have half of two instead of all of one?

A Because of the diversity between the two.

Q You mean their different locations?

A Different locations, different operating characteristics -- if you have one of them fail and go out of service, if you have all your eggs in one basket, you lose the whole output, whereas if you have participation in two of them, why, hopefully, you'd always have one of them available.

Q In your statement on page 5 you use a curious phrase. You say that -- Exhibit 19-C shows that without Colstrip 3 & 4 "and under area contractual planning assumption..." What do you mean by "area contractual planning assumption"?

A That's the assumption that's inherent in these exhibits that we've been looking at, and they are utilized for area power planning studies, such as the West Group Forecast of the Pacific Northwest Utilities Conference Committee, and also utilized under our planning and operating agreement, the Pacific Northwest Coordination Agreement.

Q In other words, you mean by that the fact that you plan your power needs on an areawide basis larger than your system, is that what you mean?

A No, I mean that all systems in the area use a common criteria in planning their resources.

Q And in that same sentence, when you say that an energy shortage exists in all years, what you really means is that an energy shortage exists in all years if you don't use the resources of your combustion turbines. Isn't that what you really mean?

A Which is the procedure that's been used in the area planning study.

Q But that's really what it means? You see, the statement is made flat out, and it might be presumed, I suppose, to be -- to involve total possibilities of resources, but that's not really what it means at all, is it?

A If you ignore any potential constraints or restrictions, why, your conclusion is correct.

Q Well, let's talk about those restraints and restrictions. On page 7 in the first paragraph there, you talk about the additional energy production being theoretically available from these combustion turbines. Now, your company did build the combustion turbines, didn't they?

A Yes.

Q Did they build them before the energy crisis? I'm talking about the oil crisis.

A We completed our first group actually during the period of power shortage.

Q Then did you build some more?

A We built some more subsequently.

Q So you really built these, as a company, fully mindful of the fact that you might have a fuel problem, right?

A No, there was no knowledge of any shortage of fuel at the time we undertook to build them. That developed at the time that they were under construction.

Q Well, you said you've built some more since, though.

A The fuel shortage really began in the fall of 1973, and it was earlier that year that we began the construction of our second plant, the Beaver plant, which was completed, the first phase of it, in August, 1974.

Q Have you ever been unable to get fuel?

A We had sufficient fuel to run during the period of shortage. We have since filled our storage tanks full of $20 million worth of oil, and due to the good water conditions, which have generally persisted since the shortage, we have had a very minimal operation on the combustion turbines, so we did not have any other sources lined up, but fortunately, neither did we need any.

Q Do you get interest on that oil in those tanks?

A I wish we did.

Q You have a sentence in this paragraph -- I won't dwell on your financial problems, which I can certainly appreciate if the circumstances you describe are taking place, but let's look at this sentence: "Local environmental considerations may provide a further limitation on realization of needed energy production." What do you mean?

A Permits for operation of the plant.

Q Don't you have a permit to operate the turbines?

A We have had permits, and they have constraints in them. We do not have permits for unlimited operation.

Q You mean you built all of this capacity, but you can't use it sometimes because governmental units won't let you?

A We found that after we had them built they became increasingly restrictive in their requirements.

Q You remind me of a witness we had in the other part of this hearing who suggested we build the plants, and then if the Board of Health didn't like them, why, we could tear them down again. What you're saying is that the regulatory agencies in the State of Oregon might have an objection to your running these plants full bore?

A Under our present permits, we're not allowed to run all of them. We have three different plants that we're speaking of. Each has different conditions, but we do not have the right to run them full bore, that is correct.

Q Why don't you? Why wouldn't they just let you run them if you need them?

A They are concerned about principally air quality and the number of hours we'd be running per year, and in some cases they're concerned about noise, and because there has been opposition from local residents, they have built into our permits certain restrictive clauses.

Q You mean to tell me that the people of Oregon who need power, according to your charts here, actually are concerned about these environmental problems, the same as the people of eastern Montana?

A People seem to be concerned about it wherever you go.

Q Well, do you appreciate the fact that if you are able to get Colstrip power to replace the need shown on your Exhibit

19 to run your combustion turbines full time, in order to meet your demands if you didn't have Colstrip, that you're really shifting the ecological and envircnmental problem from Portland to Rosebud County, Montana?

A It was never our intention to run the combustion turbines flat out for energy. They were for emergency conditions.

Q Well, let's put it the other way, then. If you can't break through and get the plants built in eastern Montana because of ecological and environmental reasons, air pollution, if you will, and other reasons, then you may have to run them, according to your own chart, full bore, and that would mean that the people of Oregon would have to take the environmental disabilities, wouldn't they?

A If it indicated that we had to run them full bore, we have two alternatives. Either we would have to acquire the fuel and obtain special dispensation to operate them, or we'd have to turn the lights out in Oregon.

Q So to keep the lights from going out in Oregon, we've either got to suffer some environmental impact or we have to shift that environmental impact to the State of Montana, is that right?

A Well, that's one way of putting it.

Q I think it is one way of putting it. I only have one other question. In your annual report here, you show an average rate per kilowatt for residences of 1.56 cents per kilowatt-hour. Has that been raised since this annual report?

A Yes, it has.

Q Do you know how much?

A That's an annual figure. I believe you're looking at the 1974 figure. We have had several rate increases recently, which would impact that number. I am not sure just what it would be currently, but I do believe something a little over 2 mills, or 2 cents per kilowatt-hour.

Q About 2 cents per kilowatt-hour. Are you aware -- I don't know if you were here, but are you aware that Montana Power's last year's report shows that it was 2.46 cents per kilowatt-hour, and that the rate increase that they're currently asking for would make that 3 cents per kilowatt-hour, for Montana residences?

A I recall your making such a statement, yes.

Q So if the people of your area in Oregon are able to get the Colstrip plants built, so that they don't have to run your combustion turbines full time to keep the lights from going out, they are not only going to keep the environmental impact in Portland down, but they're going to be able to do this at 66% of the cost that it's costing the Montana resident to get his electric lights to burn. Is that a fair statement?

A I'm not sure whether it is or not, the way you led me through that. I don't know whether it's true or not.

Q Well, do you see that -- and I trust your company makes money; it's not in the red, isn't that true?

A We have hopefully an adequate return for our common stockholders.

Q And because of the nature of your plant and your distribution area, which I'm sure is more compact than Montana Power's, and because of other economies that your intelligent management has been able to perceive, including the possibility of getting your power from Colstrip, your residential customers are able to buy the same light globe turned on for 2/3 of what Montana's residential customers are, and still have the environmental impact at Colstrip instead of on the Columbia River, isn't that true?

A Your conclusions about the rates are correct, and if you choose to isolate one single facility that our system hopes to participate in in another state, that's true, but may I remind you that power supply is an area problem, and it goes both ways. In this particular isolated case, we hope to buy from this particular plant in Montana, and we do not have any offsetting exports to Montana, but other than that, power is going in many different directions.

Q Including California?

A Surplus power to California. There's no market for it elsewhere.

MR. GRAYBILL: Thank you.

HEARINGS EXAMINER: Let's recess until 25 minutes and 1 second after 3:00.

MR. MELOY: Mr. Davis, I only have about five minutes of questions. Is the reporter all right on tape?

HEARINGS EXAMINER: She's fine. Very well, if that's all right. We'll proceed.

Cross, by Northern Cheyenne Tribe, Inc.

By Mr. Meloy:

Q As Mr. Bellingham just mentioned, Mr. Bredemeier, I represent the Northern Cheyenne Tribe, people who have been citizens of

Montana for longer than most of us, and because of that reason, I am particularly fascinated with Mr. Bellingham's statement to the Board of Health about Sir Galahads, and at the outset of Mr. Shenker's testimony he asked you whether you were a Sir Galahad. Mr. Bellingham objected on the grounds that he was only referring to attorneys, but you answered "yes" to that question. Why did you answer "yes"?

A I perhaps answered too promptly. I didn't really understand the thrust of the question.

Q Mr. Bellingham thought that it was presumptuous of people from the Pacific Coast to try to run things in Montana.

MR. BELLINGHAM: We move to strike the unsolicited comment here from an attorney. If we need a final argument, I would suggest that it perhaps should be postponed until the proper time.

HEARINGS EXAMINER: Sustained. Irrelevant, redundant.

MR. MELOY: Mr. Davis, may I be heard?

HEARINGS EXAMINER: No, let's ask a question that you want to ask and go on with the thing. I don't think we need the Sir Galahad anymore on it. That's kind of a moot question now. I think it was initiated in jest by Mr. Shenker, and it's not a real issue in this case.

MR. MELOY: It's not a real issue that these folks come from the Pacific Coast to Montana to get power?

HEARINGS EXAMINER: Ask him the questions about it, then. Go ahead, question him about it without a recitation of Mr. Bellingham's and Mr. Shenker's exchanges that aren't really evidence and I don't think have any merit to them, Mr. Meloy.

Q Mr. Bredemeier, what detriments will you suffer in Portland, Oregon, by virtue of a Board of Health decision to permit the construction of Colstrip Units 3 & 4?

A To permit the construction of it?

Q Yes.

A Well, I don't see any direct environmental impact. Some of our money will go for taxes in Montana instead of Oregon.

Q How about economic impacts? Detrimental economic impacts?

A Well, again to the extent that the plant is constructed out of state, the construction payroll and all that, if that's considered undesirable, that would be an undesirable impact.

Q Do you consider that undesirable?

A You asked me what possible undesirables. I mentioned those as being possibilities if one thought that they were undesirable.

Q But we know from your cross-examination by Mr. Shenker and Mr. Graybill that you had the option of adding another couple hundred megaawatts at Boardman, and you still have that option -- that provides construction payroll in Washington, I take it?

A Oregon.

Q I mean Oregon.

A We would have that option in later years, but not in time to replace the initial years of expected operation from Colstrip.

Q What detriments do you expect to occur to the people in eastern Montana by a decision by the Board of Health to certify the 3 & 4 units?

A I'm not aware of any detriments.

Q Have you done any studies to determine whether there are any detriments?

A I have not.

Q Did you instruct Montana Power Company to do any studies?

A If Montana Power Company wishes to join with us in a plant in Oregon, we'll do whatever is necessary in Oregon. We wouldn't expect Montana to come over and tell us how to do it, and by the same token, they're competent to build power plants as necessary in their area, and we trust their expertise.

Q What you've done, essentially, is delegate the responsibility to do those studies to Montana Power, is that correct?

A Except to the extent we may have participated in the decision to employ or make certain studies and pay for them.

Q But you did none at Colstrip?

A I believe certain studies have been made, and we participated in the authorization and funding of those studies.

Q Well, how about studies of potential impact on the 3,000 people that live on the Northern Cheyenne Reservation? Did you participate in either a direction to the Montana Power Company to do that, or on your own?

A We did not make any on our own, and I'm not personally familiar with what studies Montana Power has had made.

Q As a utility executive on the Pacific Coast who owns part of the potential power plant at 3 & 4, are you concerned at all about the welfare of the Northern Cheyenne?

A We're concerned about the welfare of all American citizens, not specifically the Northern Cheyennes, anymore than anyone else.

Q But that's not what I asked you. Would you answer my question more specifically? Are you concerned about the welfare of the Northern Cheyennes?

A I'm concerned to the same extent that the Montana Power Company should be concerned if they joined us in a power plant in Oregon.

Q What you're telling me, then, is you've delegated your concern to the Montana Power Company?

A In a sense.

Q Did the Montana Power Company give you any assurances that there would be no impact on the Northern Cheyenne Reservation from Colstrip Units 3 & 4?

A I'm not aware of any such representations, either pro or con.

Q Did you ask them for any?

A I didn't personally. What discussions may have been held by the other various executives of the companies, I don't know.

MR. MELOY: I have no further questions, Mr. Davis.

HEARINGS EXAMINER: Let's recess till 3:30.

(RECESS AT 3:15 P.M.)

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Following a brief recess, the hearing reconvened at 3:45 P.M. on January 22 1976.

HEARINGS EXAMINER: We will proceed with your cross-examination, Mr. Shenker.

CONTINUATION OF EXAMINATION OF GLEN E. BREDEMEIER

Cross, by Department of Natural Resources and Conservation

By Mr. Shenker (continuing):

Q Mr. Bredemeier, in order for the Portland General Electric Company to have some benefit from the Colstrip units, it would be necessary to construct more transmission than you now have available to your system, isn't that correct?

A The Bonneville Power Administration, I assume, might have to build some links in there; we wouldn't have to build any transmission on our own system.

Q But it would have to be built or it couldn't get to you?

A Right, whatever increments were required, yes.

Q Back in July of 1972 when the Portland General Electric Company was then contemplating entering the Colstrip project, the board of directors was informed that there would be transmission problems attendant on the Colstrip two 700 watt coal-fired units. What would those transmission problems have been?

A I can only conjecture that they might have been referring to difficulties in obtaining right-of-way.

Q At that same meeting there was also reference to the potential participation of the Portland General Electric Company in the WPPS number 3 plant, and that there were transmission problems attendant on that facility. What would those transmission problems have been?

A I would assume the same; it seems that wherever you try to build something there is some opposition.

Q What would be the right-of-way problems coming from the WPPS project?

A I was conjecturing that that would be the only reason; I see no electrical problems in connection with it so it would have to be some sort of a right-of-way problem.

Q You don't know what kind of a right-of-way problem that might have been?

A I really don't, no.

Q As far as the Colstrip project is concerned, do you now know of any right-of-way problems in connection with the 500 KV transmission from the Colstrip units?

A I really am not aware of the situation with respect to transmission.

Q When you first contemplated entering the Colstrip project in August of 1972, it was then the belief of the company, was it not, that even if you took 15 percent of the output of the two 700 megawatt plants at Colstrip, you would still need an additional 200 megawatts in 1978, and 200 megawatts in 1979, right?

A That doesn't sound unreasonable because we entered into this whole furor with large deficiencies out in future years, so I'm sure that those figures are reasonable.

Q Additionally, at that time it was the view of your company, was it not, that you could use 300 megawatts more in order to back off of combustion turbine operation in the event of critical water?

A Three hundred more, you mean, of new base load?

Q Yes.

A I'm sure that is correct.

Q In November of 1972, after you had signed the letter of intent with three of the other Colstrip participants, it was then the view of your company, was it not, that alternatives to the Montana coal-fired generation would be one or more small oil-fired plants in Oregon?

A That would be my opinion, that's about the only alternative there was.

Q In April of 1973, Mr. Bredemeier, the Montana legislature was in the concluding stages of passing the Utility Siting Act of 1973. That fact was reported to the board of the Portland General Electric Company by Mr. Porter; Mr. Porter is your boss?

A Yes.

Q According to the minutes of the board meeting of April 10, 1973, Mr. Porter discussed the effect of newly enacted mining control legislation in the state of Montana which might very well cause a delay in the on-line date of the proposed Colstrip plant of at least two years. That was in April of 1973 before the application was filed in this proceeding. Did you know about that?

A I knew about it when I read it in the board minutes which I furnished to you.

Q Well, as a planner for resources for the Portland General

Electric Company, did anyone let you in on the fact that there had been that discussion at the board level?

A I wasn't really the planner; I had certain responsibilities, and I was not directly involved in the negotiations regarding Colstrip. Now I may have been -- undoubtedly I was aware of it at the time; I couldn't tell you the exact time and so on.

Q Mr. Porter must have shared with you, did he not, the indication to him as he reported it to the board at that meeting in April of 1973, that it was necessary to re-assess the company's committment to the Colstrip project?

A I'm sure that I was aware that there was a potential problem, yes.

Q Then it was at the next meeting, and it was a special meeting of the board of the Portland General Electric Company on May 2, 1973, that the discussion took place to which we have already referred in which Mr. Warren pointed out in his capacity as the president of the company that the absolute need of the project was not yet clear, and that it would be prudent to have alternatives available. At that same meeting, Mr. Warren reported to the board that the Bechtel Corporation had already indicated some doubts regarding the availability of the Boardman plant in 1980. Of course, we know now that the Boardman plant is scheduled for a different date than 1980, don't we?

A That is correct; no, I'm sorry. That was referred to in there, I'm sure, as the proposed nuclear plant at Boardman in 1980, and what we are now calling the Boardman plant is the replacement of coal.

Q The replacement of the nuclear plant with coal?

A That is correct.

Q That was a decision made some time after the folks from Bechtel had expressed their concern about being able to get on line with nuclear by 1980?

A That seems reasonable.

Q Is Bechtel also the contractor for your coal-fired generating station at Boardman?

A They were the architect engineer.

Q And are they also the architect engineer for your nuclear plant at Pebble Springs?

A Yes, they are.

Q And were they also the architect engineer for your nuclear plant at Trojan?

A Yes, they were.

Q In assessing the desirability of PGE going into the Colstrip project, the board of Portland General Electric Company knew in May of 1973, did it not, that even if the output of Colstrip was surplus to PGE needs, it would be readily saleable to others?

A I don't think that we knew anything for sure, but I would believe that our best estimates would indicate that there was a high probability that it would be.

Q It was Mr. Warren's conclusion at that meeting in May of 1973, that the company's future lay with base load nuclear plants, but the Colstrip project could fill a need in 1979 and 1980. Would you agree with that view, sir?

A Yes, I would.

Q Well, now that we know that 1979 is not one of the years in which you would have Colstip available to you, do you have any modification of your agreement with that point of view?

A It would still be desirable; I wish that it could be there in 1979 and 1980.

Q Wishing won't make it so, will it?

A That's right.

Q Now that we know that that won't make it so, do you have any amendment to your view?

A I think the view is still correct, but it does leave us with a little problem that year; the lack of it does.

Q By the time the board approved, at the special meeting on May 23, 1973, that PGE could participate up to 25 percent of the Colstrip project, there was considerable risk that the Colstrip project would not be completed in the 1978-1979 period as projected, isn't that true, sir?

A That seems reasonable.

Q And the board did authorize moving up to as much as 25 percent for the Colstrip participation by PGE. Why the variance from 15 to 20 to 25 percent?

A Well, as we discussed earlier, apparently when all the principles sat down to derive what they thought would be the best percentages, it ended up being 20 percent for us. I didn't participate so I don't know what the logic was with respect to our own company or the other attitudes, but that's where we ended up.

Q By May of 1973, the board knew that 1978-79 looked pretty tough; in November of 1973, Mr. Warren pointed out to the board that the Colstrip project was at risk as a 1979, 1980 resource, not only because of the pending litigation and the conflicts between the environment and agriculture and strip mining, but also because of the difficulties inherent in establishing the necessary transmission; I presume you were generally aware of that?

A Yes.

Q Now when you knew that the project was at risk as a 1979, 1980 resource, did that send you back to the planning boards to do something else?

A There wasn't much else we could do at that late date.

Q What were the difficulties inherent in establishing the necessary transmission; is that the same problem you were talking about before on rights-of-way?

A I would assume so, I am not familiar with the details of the transmission program.

Q In February of 1974, Mr. Bredemeier, you appeared before the board and reported on the status of the Colstrip project. At that time, according to the minutes of the board meeting, Mr. Warren discussed the various problems relating to Colstrip, including three lawsuits and new and restrictive environmental state legislation. What was the new and restrictive environmental state legislation in February of 1974?

A May I see that; I have a set here but it's easier to look at yours.

Q As you will recall, those were attached to the interrogatory answers which you furnished for us.

A Yes, I remember furnishing them. I believe, of course, I was not an officer of the company, but I undoubtedly was making a brief report on Mr. Porter's behalf and my knowledge was not in depth at that time.

Q My question was what was the new and restrictive environmental state legislation?

A I would assume that it had to do with the Siting Act.

Q In September of 1974, Mr. Bredemeier, Mr. Warren reported to the board that the estimated cost of the transmission for the Colstrip project was two hundred million dollars. Will you accept that as a reasonable estimate at that time?

A Yes.

Q Do you think that the figure would be higher now?

A I would certainly think so.

Q Just in passing I note that in the conclusion of those minutes, Mr. Warren responds to a board member, Mr Wessinger, and said that there were still substantial challenges to the Colstrip project and that it was not inconceivable that they could be successful. Was that your view, too?

A That appears to have been the situation for some time.

Q Then the most recent board minutes that you furnished to us, Mr. Bredemeier, regarding the Colstrip project, were of November 12, 1974. Mr. Warren opened the discussion on power generation with the observation that the political situation in the state of Montana was very difficult and that it might have impact on the Colstrip project. What does that mean?

A I presume it has to do with the reason we are here today.

Q What is the political situation?

A I suppose political situation embraces the departments and commissions and whatnot of state authorities.

Q Mr. Warren also noted at that board meeting that the delay or stoppage of the Colstrip project would complicate the deferral of the Carty coal plant until 1980 and Pebble Springs number 1 until 1982 and Pebble Springs number 2 until 1985. What do you mean to complicate the deferral of those plants?

A I presume what he had reference to was that we were counting on Colstrip and if it couldn't be counted upon, we would not be able to complete the others at the later time schedule, but might have to, if possible, try to accelerate them.

Q Doesn't the language complicating the deferral of the other plants mean to you that as a result of the Colstrip participation by PGE, there previously had been a decision to defer the other plants?

A That seems to be implicit in the words.

Q Did you participate in that decision?

A I was not there.

Q The whole matter was resolved, according to the last sentence of the board minutes which states that a lengthy discussion of the problem and the alternatives ensued and it was concluded that the situation was a very complicated and important one and that it would be necessary to watch it carefully.

A That's an understatement.

Q That certainly resolved the whole problem, didn't it? Now turning for a minute, Mr. Bredemeier, to the same Nuclear Regulatory Commission proceeding that we had discussed earlier but on a different subject in that proceeding; do you know a Mr. Edgar S. Wildfong?

A Yes, I do.

Q Who is he?

A He is the vice-president of Portland General Electric Company.

Q What is his area of responsibility there?

A Regulation and revenue requirements.

Q Do you also know a Mr. Staines?

A He is the controller of Portland General Electric Company.

Q Both of them, of course, testified in that proceeding, did they not?

A You probably have reference to the proceeding in June and I believe that they did.

Q And then there was a rate proceeding that PGE participated in within the last year or two, too, was there not?

A At least one.

Q You would agree, would you not, sir, that the large amount of new financing has placed an extreme burden on the Portland General Electric Company to generate sufficient interest coverage to allow a reasonable proportion of these financial requirements to be met with net securities. You'd agree with that statement, wouldn't you?

A Yes.

Q Translated from accountants language, I assume that means that financing is pretty tough?

A That would follow, yes.

Q And the reason that financing is pretty tough is because you are now in the middle of a period of extremely rapid and massive expansion of generating stations, isn't that true?

A In common with other utilities, we are in that situation.

Q In view of that problem in which you find yourself today, don't you think, Mr. Bredemeier, that a reasonable point of view from the standpoint of the rate payers, leaving myself aside, customers of Portland General Electric Company and your stockholders, too, for that matter, is that it might be welcome for Portland General Electric Company not to have to incur these additional financial burdens to participate in the Colstrip project?

A I don't believe our customers would be very happy if we couldn't carry their load and failed to meet our responsibility under state law.

Q Well, that is a fine general statement and I, as one of your customers, I'm sure would agree with that; but you know that you can meet your customers' loads without the Colstrip project throughout the entire period of time that appears on the exhibit material you have brought to us?

A I know nothing of the kind.

Q Well, Mr. Bredemeier, you've already told me that's the case; you may have to dip into combustion turbines, you may use critical water adder, that is to say more adder than the critical water prediction suggests; and it may be as a result of diminished load, but you expect to meet those loads, don't you?

A We certainly hope to, but I know nothing for sure. I don't know that we are going to have smaller loads, I don't know that we are going to have water any better than critical, and I have no knowledge that we'll be able to run the combustion turbines to anywhere near the extent that I have shown as "possible."

Q Well, I think that most folks would agree with you, Mr. Bredemeier, that you don't know anything for sure on looking into the future, but that would include, would it not, that you don't know for sure that you need the Colstrip power either?

A We don't know anything for sure, that's right.

Q I presume that that is the reason you used the rather circumspect language as compared with some of your sister utilities in the statement of testimony that you have filed here where you refer to the Colstrip units 3 and 4 as being welcome if available. Now that's not exactly a strong pitch for necessity, is it?

A No, and it's because of this nebulous additional possible amount from the turbines that makes that qualification.

Q The point of view that you express in your written statement of testimony is that if you're wrong in your present projection of load growth, if it is, in fact, lower as a load to be serviced then you have forecasted, then you could always solve that problem of having too much power available, too much surplus on hand, by stretching out the construction schedule for new facilities?

A We would hope that that would be a possible thing to do, yes.

Q Well, of course, events have shown that for the moment, in any event, some folks have helped you on the Colstrip project because that schedule has been stretched out some already. Other events have stretched out the project for which PGE is the project sponsor, and your view, as I understand it from past discussion with you in deposition, is that that is the history of the development of projects for generating thermo power, at least in the Pacific northwest over the last few years. The schedules are deferred from time to time, aren't they?

A For a variety of reasons they have had to be deferred, not always willingly.

Q Let's just see if we can sum up by ticking off those reasons. One would be a re-assessment of load growth, would it not?

A That can be a consideration; it has not been the primary reason.

Q A second consideration would be financing problems, would it not?

A It could be; it has not been.

Q Why do you say it has not been? In fact, the folks from ERDA think that that has been a substantial reason for the deferral of coal-fired generating station construction, isn't that true?

A I believe they testified nationwide that is the case; we have not had any difficulty selling our securities to date.

Q To date. But you haven't had quite the capital needs that you're going to have when you look at the combination of Pebble Springs 1 and 2, your participation in the Colstrip project, your sponsorship of the Boardman project, and the 1, 2, or 3 remaining facilities that you intend to build at the Boardman project. That is a lot of capital, isn't it?

A It's a rather awe-inspiring consideration, is it not?

Q Sure it is. And a third reason for the deferral of units all over the country, indeed, not just in the Pacific Northwest or in the Rocky Mountain states, is delays in licensing procedures; that's true, isn't it?

A Very definitely.

Q In particular, the longer delays have occurred in the nuclear licensing field, isn't that true?

A I think, as a generality, nationwide that is the case.

Q One of the problems, of course, in the nuclear field is that there is a hearing that takes place with respect to the safety of the plant separate and apart from the hearing that takes place on the siting of the plant, so you have to run through double sets of considerations on nuclear facilities, right?

A Both state and federal.

Q That gets to be somewhat complex, doesn't it?

A It does take time.

Q And it does take time. You believe those are legitimate considerations on the part of society, do you not, even though they may take more time than you would like them to take?

A They are the law of the land; it makes your estimating very difficult when you are trying to predict the need for something ten or twelve years hence when your system is going to be twice the size it is today.

Q It makes your life more difficult personally, too, doesn't it?

A That's right.

MR. SHENKER: I have no further questions at this time, Mr. Bredemeier, thank you very much. I also have no objections to any of the exhibits tendered in the series of the Portland General Electric Company, Series

19, nor to their annual statement.

HEARINGS EXAMINER: The record will show that Exhibit 19, 19-A, 19-B, 19-C, 19-D, and Exhibit 115-C are admitted. Redirect, Mr. Bellingham.

Redirect, by Applicants

By Mr. Bellingham:

Q Mr. Bredemeier, you've been talking about permit problems; do you recall a statement to that effect just a few seconds ago?

A Yes.

Q Let's take up several of your plants and find out the reasons for delays. First of all, let's take up the Boardman Plant. Has there been a postponement delay in the expected completion date of that plant?

A Well, the Boardman Plant, originally, was intended to be a nuclear unit, and after we ran into difficulties there, we had to switch that nuclear project to the Pebble Springs site and convert it to a coal plant at Boardman. After going through due process, we have received a permit for the coal-fired plant at Boardman.

Q It is behind schedule, is it?

A Somewhat from the original intent, yes.

Q And what is the reason for that?

A Well, a combination; primarily, the length of time of the hearings and then, as Mr. Shenker indicated, we did slip in there until 1988.

Q When you say hearings, what hearings are you referring to?

A State hearings.

Q That was by your state agencies?

A That is correct.

Q Similar to the one that we are undergoing here?

A That is correct.

Q Now what about your Pebble Springs completion date; has that slipped at all?

A Yes, it has.

Q And what are the reasons for that?

A We are still in hearings and we have a litigation against us at the state level.

Q What kind of a litigation?

A I believe the legal term has to do with appeal, and it relates to a permit that was recommended be issued by the state Siting Council but which the Governor will not sign as long as this decision of the Siting Council is under appeal.

Q All right; now Pebble Springs, as you indicated, is a nuclear plant, is it not?

A Yes, it is.

Q Now in the state of Oregon is there some kind of a vote that is coming up here within the next year or so regarding nuclear plants?

A Yes, in November of this year there is what they call a moratorium bill on nuclear plants.

Q What is that?

A Well, it's entitled, "Safeguards", but careful reading of the bill would indicate that it would be virtually impossible to build a nuclear plant in Oregon if that should pass.

Q All right. Now is that going to be put to the vote of the people?

A Yes, it will in November.

Q And if they vote in favor of a moratorium, what effect will that have upon nuclear plants?

A It will be disastrous.

Q What will happen to your Pebble Springs plant?

A We would not be able to complete it.

Q And as of right now I'm sure you do not know what the good people of Oregon are going to do as far as that vote is concerned?

A No, I would hope that sanity will prevail, however.

Q Meaning a vote in favor of the nuclear plant?

A Against the moratorium, that is correct.

Q Now there has been a lot of discussion here today regarding a footnote appearing at the bottom of your Exhibit number 19. That footnote states what?

A The words indicate additional energy available from base loading. Let's look at my most recent one; I think that's a year ago.

Q I'm talking about Exhibit number 19.

A This Exhibit 19 is additional energy possible from combustion turbines.

Q That appears in the footnote?

A Yes, it does.

Q Then follows figures for each year, is that correct?

A That is correct.

Q And those figures pertain to average energy, is that correct?

A That's correct.

Q Now you have testified regarding these turbines; but I would like to put them all together in one place, if we might, and see if we can't find out what the situation is regarding these particular turbines. Is it possible under existing regulations to run these turbines to obtain the energy figures that are mentioned on the bottom of Exhibit number 19?

A No, it is not.

Q What are the reasons?

A The permits, or lack thereof, would not permit us to run to this extent.

Q All right, let's take up some of these turbines. You have one group at where, Harborton?

A We have a group at Harborton and Portland, that's correct.

Q All right, let's take Harborton up first; what kind of a permit do you have there?

A We have an expired permit; a new one has been tendered, the terms of which severely restrict the number of hours that we can operate for the next two years at which time they have told us to dismantle the plant and move it away.

Q At the end of two years?

A That's correct.

Q And what kind of a restriction are they placing upon the hours?

A It's 850 hours per year.

Q Under emergency conditions?

A Under emergency conditions only, that's correct.

Q Right as of this moment could you run that turbine if you wanted to?

A Well, that's legally questionable; I think that under the temporary extension of the old permit, if we can prove that it's an emergency, they would authorize our utilizing it.

Q Now you have turbines at Bethel, do you not?

A Yes, we do.

Q What is the situation as far as the permit there is concerned?

A We have just received a new permit which we have accepted under protest because of its restrictive terms.

Q And when you say restrictive terms, what do you mean?

A I mean that the permit will expire on the earlier of two years for when we have run 750 hours in the plant. In other words, if we run 750 hours, that permit is gone.

Q In other words, the permit will expire at the end of two years or at the end of 750 hours of use, whichever is less; is that correct?

A That's correct.

Q And if it expires after two years, what are the possibilities of obtaining a further permit?

A Well we certainly hope to, and will make every endeavor to obtain an extension.

Q But that is by no means certain?

A By no means.

Q Now what about your turbines at Beaver; what is the permit there?

A We were initially given a three year permit which, I believe, expires later this year or the first of next year which had certain constraints as to the hours of operation and the production that we could utilize at that project.

Q And do these restrictions as to hours vary from month to month and from year to year?

A Yes, they do.

Q Do you have a guess regarding the number of hours it's possible to run these if you wanted to?

A Not exactly, the estimates were made on our prediction of a normal operation under good conditions per their request; and that, then, is how our guess under such conditions became a ceiling; and I believe, for this particular year, the quantities are quite low. I would imagine they would average much below half of the time for half of the output for this current year.

Q I assume that some of the reasons for these restrictions pertain to air emission problems?

A Primarily air contaminants.

Q Now then, these turbines are run, when you use them, by what fuel?

A They can operate on natural gas or petroleum fuels; however, natural gas is not available, so, basically, they are fueled by petroleum distillates.

Q What do you have to say about the fuel oil, as far as cost is concerned?

A It is very costly. As I indicated, we have a large stock now which, under a flat out operation, would all be used, consumed, within two months of such operation. The fuel is very costly, much more so than we had originally anticipated.

Q What about the possibility of obtaining additional oil in the future?

A At the instant, the United States oil is available; but we have no assurance that that will continue to be the case, and we have no allocation from the federal government to receive any, so we have no assurance.

Q What is the federal policy relative to using oil for gas combustion turbines of this kind?

A The federal policy is against using petroleum fuels for the generation of electricity; they don't want us to use it.

Q Are you having any other problems with these turbines; what about noise factors?

A We have had some difficulty with noise because of various constraints and rulings that have been made, and the noise aspect could and will under the present permit, constrain the hours of use on one of our plants, and on another plant will require us making further investments above those substantial ones we've already made at both plants in order to meet the sound standards.

Q Well, you say restraints as to one of the plants caused by noise problems; what kind of restraints are you talking about?

A We only run it at half load during the night.

Q Do you have any figures regarding the use of electrical heat in homes of the customers for whom you serve?

A Yes, there was such an interest displayed in that here yesterday that I took it upon myself to get a few figures over the telephone today.

Q I don't think we'll bore Mr. Shenker, I'm sure, by your figures. What figures do you have for 1975?

A I obtained several different figures; one was as of some point in 1974 what the total mix of electric heat was amongst our total residential customers, that is at that point in time cumulative to date. And then, in addition to that, I found what the breakdown was on additions during the calendar year '74 and, similarly, preliminary figures for 1975.

Q Would you state those figures?

A The total mix as of 1974 was 37 percent of our customers had electric heat; the additions in 1974, 57 percent.

Q When you say additions, are you talking about new homes?

A These are new connects, yes.

Q Fine.

A Fifty-seven percent in 1974, which I thought the interesting figure was in the case of apartment buildings; they were 90 percent electric. In 1975 the percentage for the total number of customers having electric heat was 66 percent and apartments had 96.2 percent electric heat.

Q Mr Shenker has indicated that he is one of your customers; do you know whether his home is heated by electricity or not?

A No, I do not.

MR. SHENKER: The bill is high enough.

MR. BELLINGHAM: You tell me what a temperate climate you live in out there; I didn't think you needed to heat homes.

Q I think there has been some testimony in here relative to California companies which you have contracts with regarding furnishing electricity to. Can you briefly relate the background of that?

A Yes, we had a number of contracts during recent years with power going both ways because we had deficiencies; we needed to buy some power and exchange some power. However, at the present time, the survivor agreement now provides for a delivery of surplus summertime capacity from our system to California -- capacity only, there is no energy obligation.

Q Now when you say capacity, you mean peak?

A I mean peaking, that is correct, no energy. And then that is repaid to us part in cash and part, beginning in a year or so, will be repaid to us by receipt of wintertime peaking to our system from California.

Q Are you getting back any energy from California?

A There is no energy guarantee in either direction.

Q Now then, as far as furnishing this peak in the off season by you, that is in the summer, is it?

A Yes, it is.

Q And is that excess to your needs?

A Yes, it is. We have a winter peak and we have a surplus capacity in the summertime.

Q You previously referred to the '75-'76 deficit contained in one of your load forecasts; what kind of water conditions have you had as far as your hydro is concerned?

A Excellent.

Q What about the weather?

A Very mild.

Q We're talking now about this winter of '75-'76?

A The current situation, yes -- a very favorable power supply this year.

Q You breathe a sigh a relief as a result of this, I assume?
A That's certainly the case.
Q You have been asked questions regarding participation by you in the Colstrip 3 and 4 units. You have also testified about the possibility in the future of adding, building additional generating units at Boardman, have you not?
A Yes.
Q And these would be coal-fired units?
A It's possible. We really plan on the long pull to be able to build nuclear plants there, but certainly coal is one of the possibilities.
Q So it's possible that you could be building, or planning in the future, Boardman nuclear or Boardman coal-fired?
A Either one, that's right.
Q When and if the planning stages reach a point or the place where you may decide that you need additional participants other than your own company to help you cut on the building of that plant, is it the intention of your company that Montana Power would be given the opportunity to participate?
A They would be welcome.
Q You were asked about a statement made by Frank Warren some time ago, and Frank Warren is who?
A President of Portland General Electric Company.
Q At the time that your deposition was taken on March 6, 1975, you recall that, do you not?
A Yes, I do.
Q On page 72 of that particular deposition you were asked the question, "You don't have any reason to disagree with Mr.

Warren's statement as contained in the board of directors' minutes of May 2, 1973, that" and quoting from the minutes of May 2, 1973, "Mr. Warren pointed out that the absolute need of the project was not yet clear, but he felt that it would be prudent to have alternatives available."
You were asked at that time if you agreed or disagreed with that statement; do you recall that?

A Yes, I do.

Q And your answer at that time was, "That has been nearly two years ago and power supply planning is always in a state of flux; as I recall at about that point in time, we had been discussing perhaps a larger project, or our own coal project, which obviously had not yet come to pass." Back in the context, "I really can't say; he is very knowledgeable in these matters; I'm sure that is his best judgment and a valid comment at that time." Now, as far as that particular quotation and statement by Mr. Warren is concerned, as of this time, and I am talking now about the absolute need of the project not being clear, do you agree or disagree?

A At this time, I think that statement is no longer valid; conditions have changed since then, and it's quite obvious from all of our studies that this plant is something that we do require during that time period.

Q As I recall, you have testified that you intend to fuel your Boardman plant with coal obtained from Wyoming?

A That is correct.

Q And that is Amax coal obtained from Gillette, Wyoming, is that correct?

A Yes, it is.

Q Do you know, as of this time, what the freight rates are going to be for the transmission of that coal?

A I do not.

Q Does anybody at this time?

A No, they are under discussion and negotiation, but there has been no meeting of the minds as to what that rate might be.

Q Do you have any idea as to what it might be, what the parameters are of the negotiations at this time?

A I believe they are pretty far-ranging, but my understanding is that the cost that's being suggested is very large; it's quite an escalation since previous discussions of several years ago.

Q Do you have any idea what the mill rate is today?

A I do not know in terms of millage rates.

Q Do you know what the approximate sulfur content of that coal that you intend to obtain from Gillette, Wyoming, the Amax is?

A I believe our state permit has a limit on it which will be met by the Amax coal, and it is something not over ½ of a percent.

Q Are you planning on using scrubbers for your Boardman plant?

A We do not expect to require scrubbers here.

Q Why not?

A Because the low sulfur content will not make it necessary; we will have articulate treatment.

Q And what kind do you intend, or do you know for sure?

A At this point, we are not sure whether it will be electrostatic precipitators or some form of baghouse.

Q But it certainly will not be scrubbers, is that right?

A We do not see the need for scrubbers.

Q I don't think that you have touched upon it to any great extent, and that is the lead time in the state of Oregon to build thermo plants, coal-fired plants. What is the best in your estimates regarding this?

A Well, it would be 8 to 10 years; it depends on whether you are talking about the actual construction time or from the time that you have picked the site and start going through the licensing process.

Q Let's start at the very beginning; say that you made up your mind that you're going to build a coal-fired generating plant at some place. Now you are going to have to go through the various steps. What would you consider to be a fair lead time estimate?

A Well, I would say after you had picked out what appeared to be feasible sites, it would be not less than 8 years.

Q And how long is it going to take you to pick feasible sites?

A Presumably we are looking at sites continually; I would assume that by the time you narrowed it down, you might consume up to a years'time.

Q So you are talking in a broad range of 9 to 10 years, am I correct in that?

A That's correct.

Q What about nuclear sites?

A Nuclear takes a little longer, probably 10 to 12 years.

MR. BELLINGHAM: We are up to Exhibit number 113, are we not?

HEARINGS EXAMINER: 213.

MR. BELLINGHAM: Yes, that's what I mean; 213, excuse me.

Q I now hand you what has been marked as Applicants' Exhibit number 214, and will ask you what is Exhibit number 214?

(Witness given document.)

A This is a memorandum from Mr. W. A. Huddleston, who was a member of the grit team at that time, to the grit file regarding the transportation of coal.

Q Mr. Huddleston is an employee of your company, is he not?

A Yes, he is.

Q What is the date of that grit study?

A September 31, 1971.

Q What is the subject of the grit study?

A The cost of transporting coal for electric energy from various projects.

Q Was this particular study prepared in the usual and ordinary course of the business?

A Yes, it was.

Q I think Mr. Huddleston testified relative to the grit study that functions in your company?

A That's correct.

MR. BELLINGHAM: I now offer into evidence Applicants' Exhibit number 214.

MR. SHENKER: Enthusiastically, no objection.

HEARINGS EXAMINER: Would any members of the public like to object that are gathered here? (No response.)

Very well, it's admitted -- can't have any objections.

Q Now then, this particular grit study sets up various alternatives, does it not?

A Yes, it does.

Q And it deals strictly with coal transportation?

A Either coal transportation or electricity by wire.

Q Now those particular alternatives are down at the bottom of the study, are they not?

A Yes, they are.

Q And Item A is what?

A The assumption is that the plant at Colstrip with certain transmission installations to Anaconda.

Q And after Anaconda, what would the assumption be?

A The balance of the wheeling would have been done by Bonneville Power Administration.

Q To where?

A To load centers, presumably the load center of ours near Portland.

Q What is the designation of mills per kilowatt hour?

A That's, in effect, the cost of transporting either the coal or the electricity from the mine or plant site to our load.

Q Insofar as alternative A is concerned, what is the designation there?

A It indicates 1.89 mills per kilowatt hour.

Q Alternative B sets up what situation?

A It's an alternative in which it was assumed that Bonneville would have transmission facilities available to bring the energy the entire distance from the Colstrip plant to the load, and an estimate of what those wheeling rates would be when applied.

Q When you say to the load, are you talking there about a load center, wherever it would be distributed, at approximately where?

A I believe that this has to do with our load in Portland.

Q I see, the same as alternative A, is that correct?

A Yes, the end use should be the same in all cases.

Q It assumes, did you say, that BPA is wheeling all the way, is that correct?

A Yes.

Q Is, in fact, that a possibility?

A I don't really think that that is contemplated, or that the government expects to build such transmission; I think that this was a theoretical computation, if they could.

Q BPA owns no such transmission at this time, is that correct?

A There is not adequate transmission at present, no.

Q What is the mills designation there?

A Well, that's a cost component, mills per kilowatt hour.

Q What is it?

A For B, in quantity it's 1.389.

Q All right, now let's turn to alternative C; what does that indicate?

A This was to be a coal-fired plant at the Boardman site using coal from Colstrip.

Q What is the mills?

A 3.23.

Q D?

A A plant at Rock Springs, Wyoming, with estimated Bonneville wheeling from there, and that's 1.32 mills per kilowatt hour.

Q Does Bonneville have adequate transmission for that alternative?

A Not from Rock Springs, no.

Q And what is the designation there?

A 1.32 mills per kilowatt hour.

Q And the last one is what?

A That's a plant at Boardman bringing in coal by rail from Rock Springs; that's 2.32 mills per kilowatt hour.

Q Now then, this particular exhibit is dated when?

A September 13, 1971.

Q Do you feel that if this particular study were brought up to date, that the figures would be similar?

A I doubt it. So much has changed I would really guess that it would be a stand-off between the two, but that's an opinion.

Q A stand-off between what?

A Between electrical transmission for coal by rail, and bringing the energy to the load.

Q Now you mentioned that particular item when you referred to the DNR Exhibit number 18, did you not, volume 2, Environmental Report, Construction Permit Stage? Do you remember that?

A Yes, Mr. Shenker had it here, and we looked at that earlier.

Q Yes. That particular study was what date?

A It was in 1972, as I recall.

Q That is correct, April 1972; it states on there. Would you say that that particular study is valid and up to date as of now?

A No.

Q And the reasons for that?

A So much has happened in the interim, nearly four years, with inflation and escalation of costs, it certainly would not be correct at the present time.

Q And when you say a stand-off today, are you taking into consideration the escalation of railroad rates in the future?

A Well, it's difficult to say; the question would be whether you are trying to compare costs for a certain number of years, or levelizing the costs over the total life of the plant. You would have to qualify the type of study to be made. I can't say; I just make a general statement that it's probably about a stand-off.

Q As of this time?

A As of this time; I would expect that rail rates would continue to escalate much more rapidly than the small increased costs of the electrical transmission system that was built today.

Q Why do you say that; based on past experience relative to railroad rates?

A That appears to be the case and, of course, once you make your capital investment, the annual costs are not so great and there would not be the escalation that there would be on railroad rates.

Q Now then, it's been touched on very briefly during your examination, your rate increases. How many rate increase requests have you had in during the last two years?

A Unfortunately, more than we would liked to have had.

MR. SHENKER: I'll stipulate to that.

A Thank you. We don't like them any better than our customers do; I can give you the dates which our increases became effective, if that would --

Q Fine.

A We had a rate increase in December of 1970, October 1973, December 1974, and September 1975, and we have one pending currently.

Q When was that filed, how long ago, do you recall?

A It was filed in the early part of December, I believe.

Q I presume there has been no final action on that latest request?

A No, we don't anticipate any action until later this spring or early summer.

MR. BELLINGHAM: No further questions.

HEARINGS EXAMINER: Any re-cross, Mr. Shenker?

Re-cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Bellingham was inquiring of you, Mr. Bredemeier, about the -- what do they call it -- the Sane Nuclear Safeguards Bill, is that the title they've put on it?

A Something like Nuclear Safeguards, yes.

Q That was something that was put on the ballot as a result of an initiative petition that was circulated by some folks in Oregon, right?

A That is correct.

Q And you and your other sister utilities, of course, were opposed to that piece of legislation. The position that you've taken publically is that the bill, if passed, would result in disaster because you couldn't build nuclear plants?

A Right, that's correct.

Q Your opponents, however, take the position that your argument is not correct; that nuclear plants could indeed be built, notwithstanding the passage of the bill, simply in that case safeguards would have to be put into effect, and that is their position, right?

A That is their official public position.

Q Right. I've read the bill and it looked pretty confused to me, too, and, as a result, I didn't sign it as a petitioner to put it on the ballot.

A Thank you.

Q Well, I might vote for it depending upon which way you guys are nice to me. The fact is certainly not clear, you would agree would you not; A, that the measure will pass on the initiative election; and B, if it passes, that it will go without legal challenge from those who wish to build nuclear facilities; and C, even if they lose their legal challenge, that they may still be able to build nuclear facilities even though it may be a little bit more complex to run through the siting procedures. Would you agree?

A I think as a practical matter, if it went into litigation, it would become virtually impossible to finance such a project.

Q Well, during the time of the litigation, yes.

A That's right; it would result in substantial delays.

Q Right, deferral would be likely to be from litigation of that kind as has been true of deferral from other litigation, such as that in which we are now engaged?

A It could last quite awhile.

Q Yes. I'm glad that you pointed out, Mr. Bredemeier, the difference in language that appears on the two sets of Exhibit number 19; Mr. Bellingham asked you to explain that again. Your original footnote 1 on Exhibit number 19 last year said that you had additional energy available from base loading combustion turbines, but the revised edition has changed the wording some. It now says that additional energy is possible from combustion turbines. Did you mean to say something different this time?

A I definitely did. I made that change myself because I felt it was misleading the way it was in there before.

Q Well, the way it was in there before, it still would have been your view, was it not, that at that time, that was April of 1975, that the combustion turbines were base loading facilities, that the energy was available; but you certainly didn't want to have to call upon that energy; wasn't that you view?

A No, it's not a complete enough statement; available doesn't really tell you anything and I felt that in view of all the developments we've had that that was implying a degree of availability that really didn't exist, so I changed the tone of it to qualify it. Probably in that context it was unclear and overly optimistic in the original tabulation which was a statement that we had used, I think, for several years.

Q So you tried to make available more definite by changing it to possible?

A It showed that there was a very large cloud of doubt.

Q Okay. It is still the case, though, substantially, if we can get past the semantics, that the combustion turbines are base loading, the energy is available; but you do not now want to plan on the use of those combustion turbines for the reasons that you have explained to Mr. Bellingham and others, isn't that true?

A You said they are base loading; I don't quite understand that.

Q Well, that is your term; additional energy available from base loading combustion turbines is what you said on Exhibit number 19 in April of 1975.

A All right, if we base loaded those combustion turbines, that would be the additional energy that would be available; that is correct.

Q Now I also understand you to say that you can't run the turbines without a permit; that's true of all industries in the state of Oregon; they are required to get permits from the Department of Environmental Quality, aren't they?

A That's the case currently; it was not when we started these projects.

Q And that was also true for the Martin-Marietta Aluminum Company, and it was true for the Reynolds Metals Company, and it was true for the Western Craft Corporation; it was true for so many of the industrial facilities which had as an unfortunate by-product of their process the emission of affluent material which some folks thought might be harmful, right?

A I presume so.

Q Sure. So, you have permits that are given to you by the Department of Environmental Quality that tell you not to over-load the environment with what the Department of Environmental Quality thinks is objectionable stuff, right?

A Correct.

Q For a power plant similar to some industries, but different to other industries, one way of reducing the amount of affluent that is put into the environment is to reduce the time during which the plant operates; and that is one of the things that has been stipulated in your permits, right?

A That is correct.

Q Now that was also true, was it not, at the first new coal-fired generating station in the Pacific Northwest in which PGE participated at Centralia, Washington, where they opened the proposed 1400 megawatt facility and found that they were going to be emitting more stuff than the Washington State Department of Ecology thought should have been emitted; and therefore they had to reduce their load to 1100 megawatts, right?

A They reduced the level of output to comply, that's right.

Q Sure. The same thing is true right here in Montana with the Montana Power Company's Corette station where their level of operation produced more affluent material than they thought was proper; Mr. Labrie tells us that in his written statement in this proceeding; so they had to reduce their level of operation somewhat in order to comply. Now that is standard operation, isn't it?

A It may be that it results that way, but you don't design a plant so that you have to operate it at reduced levels.

Q No, and the problem obtains not from the whim of reducing the level of operation, but from the absence of such pollution control equipment that would prevent the affluent from being discharged into the atmosphere, right?

A I don't think that follows in all types of plants; it may in coal-fired.

Q If I understood your testimony on redirect examination properly, Mr. Bredemeier, I think I heard you say that you have two months of oil reserves with which to operate your combustion turbine facilities, if you were operating them flat out; is that what you said?

A Approximately that.

Q That means, I take it, that if you were operating at 1000 megawatts from all your combustion turbines at peak, you'd be able to do that for two months, right?

A It might take a little juggling from storage from one plant to another to do the job, but basically that's the case.

Q But you never expect to operate 1000 megawatts from your combustion turbines from now until 1987, do you?

A I certainly hope not.

Q Certainly not; and, as a matter of fact, the average energy that you expect to operate from your combustion turbines is 57 megawatts this year and next, and 73 megawatts thereafter, right?

A That's a desired minimum under normal operating conditions; that's not an estimate, it's just a figure that would typify a peaking type operation.

Q Sure. Now how long would you be able to operate the combustion turbines on your existing supply of oil, if that were the extent to which you called upon them?

A I could calculate that, but I suspect that our existing supply of oil would be adequate to, replenished when needed -- would be adequate to cover this minimum operation that we have without any difficulty.

Q No supply problem there?

A Not so far as the minimum is concerned.

(Mr. Shenker makes drawing at board.)

Q Now, Mr. Bredemeier, for the years 1978-'79, 1979-'80, 1980-'81, and 1981-'82, you currently show substantial deficiencies on your energy if you exclude the additional energy either available or possible from the combustion turbines, right?

A That's correct.

Q And in the year 1979-1980, you show some deficiency in the average energy even with the use of all of your combustion turbine capacity?

A That is also correct.

Q All right. Now I'm going to write down the amount of the deficiency for each of those years, and then I want you to tell me how you are going to meet those deficiencies, if you would, please?

(Pause to post to board.)

Q Okay, here in 1978, how are you going to meet a deficiency of 350 megawatts?

A I can't tell you at this time.

Q Not from Colstrip?

A No.

Q Then are you going to meet it from extra hydro capacities made available to you?

A If any is available, we would hope to use it.

Q How else might you meet it?

A As we approach the year in question and analyze all of the situation, we might see if the possibility that any other utility had some that we could purchase.

Q You might buy it?

A That's a possibility.

Q How else?

A Another possibility would be that the loads would not be as high as forecasted; conversely, they might be higher, but it's a possibility that they might be lower.

Q How else?

A There are only two alternatives left.

Q What are those?

A One of them is to attempt to operate the combustion turbines by getting waivers on permits, and attempting to acquire oil through whatever purchasing and governmental routes were required.

Q Yes?

A And the final one is load curtailment.

Q Now in any of those years, would the amount of power you hoped to get from Colstrip solve your problem?

A It would certainly lessen the problem.

Q But you are still going to have to do one of these five things in order to solve your problem?

A Well, if it just so happened that the problem was exactly the same size as Colstrip, that would take care of it; but assuming the problem was greater than that, yes we would have to do more.

Q As I understand it, Mr. Bredemeier, the reason you have problems with your permits, aside from oil supply which you have already addressed for me, is the environmental impact that the operation of those turbines has; is that right?

A Yes, it's constraints in the permits.

Q Yes. So, in effect, what we are talking about is a trade-off between environmental problems, if any, are created in Montana from the operation of Colstrip units, and environmental problems which are not created in Oregon by the non-operation of your combustion turbines, right?

A We don't consider that there are any environmental problems on our plants; we feel that we can meet all the necessary requirements. But, nevertheless, constraints have been put on them.

Q Well, if there are any, then there are trade-offs in the two areas geographically, right?

A If you pin it down to those two resources, you might be drawn to that conclusion.

Q Okay. One of the environmental problems is a noise problem, as I recall, you mentioned?

A That's correct.

Q My home, as it happens, is a natural gas heated home, Mr. Bredemeier, and I made sure that Francis Hill called Bill Coldiron to make sure that there was an adequate supply of natural gas, so I have taken care of that problem; but I want to make sure that I understand your heating figures on electricity versus natural gas. Can you tell me how many housing starts there were in Oregon in 1975 as compared to 1974?

A I do not have that information, no.

Q Can you tell me how many homes were built on oil-fired heat?

A I don't know, but I have heard discussions from which I would conclude that there was a virtually negligible number.

Q Virtually negligible; how many is virtually negligible in the service area that you work in?

A Let's see, in 1975 we showed a total of new residential connects of 11,136; I would consider 100 or so might be very nominal.

Q How many connects did you have in 1973?

A New homes?

Q Yes.

A I don't have that figure with me.

Q Let's move to the California discussion that you had with Mr. Bellingham. As I understand your testimony in that score, you said that no energy was guaranteed for exchange between you and California?

A That's correct.

Q But as it happens, energy sometimes is delivered from you to California or vice versa, isn't that true?

A That's correct.

Q Mr. Bellingham also asked you if you would be kind enough to let the Montana Power Company share in some new plants that you might put in some day in Boardman. Did you invite the Montana Power Company to share in the current Boardman coal-fired power plant?

A I'm not aware that we did, no.

Q Did you invite the Montana Power Company to share in the nuclear Pebble Springs plants?

A We have discussed the possibility with them.

Q Oh, indeed; how recently has that discussion taken place?

A Within the last several months; perhaps before, but I am aware of it within the last several months.

Q Are negotiations concluded or open?

A They are open.

Q I suppose they are not sufficiently open to allow the Montana Power Company to put any percentage of the Pebble Springs plants on their load resource forecasts yet?

A I wouldn't think they would want to until something develops, whether it does or does not develop.

Q They haven't got anything signed up on the dotted line there yet?

A No.

Q When you told Mr. Bellingham that as far as PGE is concerned, the Colstrip plants are now required, whereas they were only a nice option to have available a couple years ago; I take it that's within the context of the figures that I just put on the board. For example, we know that in the years 1978-'79, Colstrip is not available to you at all; we know that in the years 1980 and '81, Colstrip will not solve your problems by itself, right?

A That is correct.

Q In the current discussions that you have on with Burlington Northern regarding the freight rate that you are going to pay for the coal being delivered to your Boardman facility, you told Mr. Bellingham there was a rather extensive range, from low to high, I assume that means; do you know how low?

A Not really, I am not participating directly; my knowledge comes from discussions with those who have been participating.

Q We know that the PGE is, at the moment, intending to purchase its coal for Boardman from Gillette, Wyoming, and the Amax coal facility there. As I understand it, you have specified that the coal which you will receive will have a sulfur content of not more than .5 percent?

A I believe that is correct.

Q Do you know what the BTU of that coal will be?

A I have seen it, but I don't recall the figure.

Q Well, in the exhibit that Mr. Bellingham just introduced through you, Exhibit number 214, back in 1971 Mr. Huddleston said that that Wyoming coal was at 10,000 BTU, as compared to the 8,750 BTU in Montana. Does that strike you about right?

A Was that Gillette coal?

Q He didn't say Gillette, he just said Wyoming.

A Well, I don't think that all Wyoming coal is necessarily the same; I could obtain that figure, but I'm sorry I don't recall just what it is.

Q Do you have recollection of the fact that the Wyoming coal that you intend to obtain has a higher BTU content than the Montana coal?

A That's my impression.

Q Of course, that's a relevant consideration, isn't it, because you really look at the costs in terms of the freight rate per BTU content of the coal that you are receiving?

A You would ultimately have to reduce it to that, yes.

Q Sure. And indeed, in terms of the sulfur content of the coal, you also have to know the BTU content in order to see how much you are going to be burning, right?

A That's correct.

Q Then Mr. Bellingham asked you about lead time in Oregon for building a coal-fired power plant; now we don't have a lot of experience in Oregon, any more than they do in Montana with building coal-fired power plants. The one at Boardman will be the first, right?

A That's correct.

Q And that one has taken some time before it could finally come on; but it looks like the folks in Oregon, evidentally, are about as concerned as the folks in Montana in taking a look at the proposals in terms of the lead time of studying the proposal before a permit is granted. You've had about that amount of time taken in Oregon as has been taken here in Montana, isn't that right?

A I believe the Oregon siting law can use up to three years from the time you first declare your intent until you receive a permit.

Q Did it take almost that long?

A I believe that it did.

Q Yes. In Exhibit number 214, Mr. Bredemeier, in the first paragraph; do you have that one before you, the most recent one that Mr. Bellingham introduced?

A It's here someplace.

Q It's the September 1971 memorandum from Mr. Huddleston to the grit file.

A Thanks, I have it somewhere.

Q What?

A Yes, I do have it.

Q Yes, in the first paragraph of that exhibit, there is a statement that "it will be more expensive to go by rail from Montana or Wyoming to Oregon than federal wheeling rates for equivalent amounts of energy." What are the federal wheeling rates, what does that mean, what is that reference?

A That is where the transmission would be done over the facilities of the Bonneville Power Administration.

Q I see. Should that sentence be read in context with the fourth paragraph of Exhibit 214 in the first sentence where it says that it is not realistic to assume that the Bonneville Power Administration would, in fact, build transmission to the generating plants?

A I believe the point that is made is that if they had them, the application of the formula would give you a certain result, but he concludes that it is not realistic to assume they would build the facilities in the eastern part of the system.

Q We would assume, as well, that PGE as a sound operating company would not have decided to build a plant at Boardman and bring coal from Wyoming, if it was substantially more expensive to do that than go some other route, right?

A That's certainly a consideration; the primary consideration, of course, is meeting your customers' requirements.

Q And today you believe it's a stand-off between transmission and rail; shipment of power or coal?

A Well, I think I stated my opinion; between the two plants, the cost would be about a stand-off.

Q Right.

A I think that if you looked at the transportation component alone and levelized it over the period of the power plant, we would probably be drawn to the conclusion that the rail cost of transportation of energy was higher than by wire.

Q A little bit, a lot, which?

A Some.

Q Some?

A I haven't made any study; I am just expressing an opinion.

Q Sure. But in the balance, of course, you would have to consider, as far as local impact economically is concerned, the number of additional jobs that would be created by rail transport as opposed to mine-mouth generating stations?

A There would be a difference in the number of personnel employed, I suspect.

Q Mr. Bredemeier, the last thing that Mr. Bellingham asked you about and I wanted to inquire of you was on the rate increases that you've had. Have you also gotten to the point of plugging in price elasticity on demand when you make your load forecasts?

A Nobody knows what it is.

Q That's what Kent Anderson is consulting with you on?

A He's consulting in general with the utilities in the northwest.

Q But you haven't got a formula for that?

A My understanding is that it's not yet possible to clearly delineate just what that mathematical relationship might be.

Q In the absence of a mathematical formula, you just have to kind of make your best judgment opinion on it, I take it?

A We use a number of judgments on a number of factors in preparing our estimates, that is correct.

MR. SHENKER: Nothing further; thank you, Mr. Bredemeier.

HEARINGS EXAMINER: Any further questions, Mr. Bellingham?

MR. BELLINGHAM: No further questions.

HEARINGS EXAMINER: Very well, the witness will be excused, thank you.

(WITNESS EXCUSED)

HEARINGS EXAMINER: We will recess until 8:30 tomorrow morning, is that all right?

(RECESS AT 5:08 P.M.)